

Technical COMMUNICATION


Journal of the Society for Technical Communication

DESIGNING A LOW-COST USABILITY LAB

- CONFIDENCE-INCREASING
ELEMENTS IN INSTRUCTIONS
- DESIGN OF INSTRUCTIONAL VIDEOS



Free Your Content



Creating Software Documentation

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Creating Software Documentation / Adding Dynamic Help to Your Interface

Opening Authoring Mode

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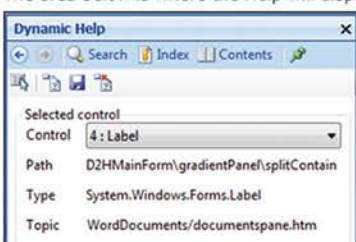
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Dynamic Help

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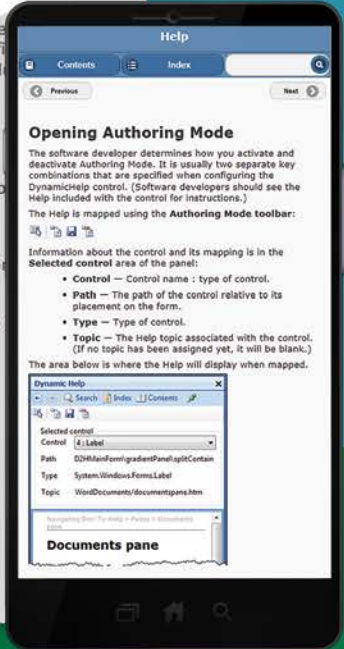
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Help


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Opening Authoring Mode

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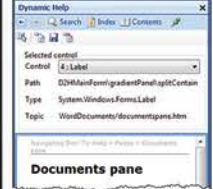
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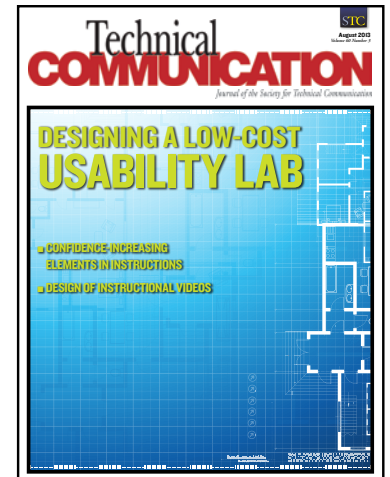
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About the Journal

Technical Communication is a peer-reviewed, quarterly journal published by the Society for Technical Communication (STC). It is aimed at an audience of technical communication practitioners and academics. The journal's goal is to contribute to the body of knowledge of the field of technical communication from a multidisciplinary perspective, with special emphasis on the combination of academic rigor and practical relevance.

Technical Communication publishes articles in five categories:

- **Applied research** – reports of practically relevant (empirical or analytical) research
- **Applied theory** – original contributions to technical communication theory
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- Page 3: Up to five keywords and a practitioner's take-away (maximum 100 words) – A bulleted list summarizing the practical implications of the article
- Page 4: Start of the manuscript
- References
- Tables and figures – Start each table or figure on a new page.

Send the manuscript as an attachment to an e-mail message to the editor-in-chief, Menno de Jong (e-mail: TCEditor@gw.utwente.nl).

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Menno D.T. de Jong, Editor

Understanding Users, Technical Communicators, and Business



Understanding Users

Technical communicators are and should be the user's advocate. All-round technical communicators are better equipped than other professionals to understand and predict whether and how people will use technology, what kinds of problems they may encounter using it, and how they can best learn how to use technology. To fulfill that role, technical communicators must know the user, preferably not in a cold scientific way, but from within, based on empathy or perspective-taking.

A major role of technical communication research, then, is to contribute to technical communicators' empathy with users. Everything we want to achieve in our discipline, in terms of contributing to society, can only be achieved through the technical communication professionals who are working in practice. Any conception of an academic discipline that systematically and gradually solves the complete puzzle of, for instance, instructing users about technological devices—comparable with the unraveling of DNA's genetic code—is not justified. It is very unlikely that all our work will eventually lead to a fundamental and exhaustive set of guidelines, which can be applied mechanically to ensure effective communication.

Two plausible but trivial arguments for that position are that there are insufficient numbers of technical communication

researchers to make that happen, and that their research activities are too scattered. Both are true, but two other arguments are more fundamental. We are working in a dynamic and complex world, and our knowledge and skills are context-dependent and often tacit. It is a harmful illusion to see social sciences or humanities as a clone of the natural sciences. In such a dynamic and context-dependent environment, the practical wisdom of technical communicators is of vital importance. Understanding users is a crucial part of such practical wisdom.

Understanding Technical Communicators

Given the crucial role of technical communication practitioners, it cannot suffice to understand the users; it is important to also have an understanding of technical communicators. We need to know more about the empathic competencies of technical communicators, as basic competencies, but also in relation to their daily workload, the tools they use, and the organizational context they work in.

What exactly is the nature of the expertise of technical communicators? It is no secret that this expertise is multifaceted, and empathic skills are just one of the many aspects. No matter how useful and insightful, existing research into the design of academic programs and the competencies asked in job postings

merely scratches the surface when it comes to the competencies that make a difference, and the potential shortcomings in the competencies of technical communicators.

We need to study technical communicators in the workplace more in-depth, and learn from the expertise of experienced and seasoned professionals, and from events in specific projects. We can learn a lot from successful and unsuccessful projects. Our journal has two article categories for such experiences: "Tutorial" for the exchange of research- or experience-based insights, and "Case history" for descriptions of projects and the lessons that can be learned from them.

Understanding Business

It is also relevant to study the business context in which technical communicators have to function. I do not think there is research to prove it—at the very least I have not found such studies—but I am convinced that an organization's mission is an important factor for the user friendliness of the user support. Does an organization see the user support as a fully-fledged part of its products? Does it make the point that the quality of user instructions and the usability of its products are important?

Or is it more about money, and the availability of an acceptable looking manual?

We have seen various initiatives in the past focusing on the added value of technical communication. It may be a good idea to follow up on that line of research, with empirical studies of organizational strategies, user perceptions, and technical communicator perceptions. The research may have a critical tone: eventually, it is about the power of money and the interests of users or consumers. I can see parallels with prolific themes such as sustainability and corporate social responsibility. For a sustainable relationship with customers, high-quality user support appears to be important. To what extent can an organization afford to make users pay for functionality they will never use and are not even aware of?

About the Journal

A few announcements about the journal must be made. I regret to say that two of our long-standing Editorial Advisory Board members have decided to step back. Sherry Southard and Carolyn Rude resigned from their jobs at their universities, and chose to also leave the Editorial Advisory Board. Sherry Southard was not only an Editorial Advisory Board member; she has also been an Associate Editor in charge of Recent & Relevant for many years. I want to thank Sherry and Carolyn for their work and dedication, and for the always pleasant collaboration, and I wish them all the best.

A second announcement involves a change in the review procedure. At the end of this year,

I will have installed an Editorial Review Board of expert academic researchers and practitioners.

The main purpose of moving from *ad hoc* reviewers to a more limited group of dedicated researchers is to accelerate the review process. I strive to reduce the maximum turnaround time for manuscripts to two months in 2014.

Third, the new impact factors in the Web of Science have been announced. The impact factor gives an indication of the academic influence of a journal, and is computed on the basis of the number of articles published in the journal and the number of times other articles have referred to them. *Technical Communication* has a new impact factor of .750, and ranks 36th in the broad category of communication journals. The new impact factor is a little lower than last year, but close to the impact factor of two years ago. Within the sub domain of technical communication, the journal takes a stable first position.

Finally, the article Hanna Mannak, Leo Lentz, Theo Huibers, and Ted Sanders wrote in last year's volume ("Three types of children's informational Web sites: An inventory of design conventions"), which already won the Frank R. Smith Award, also received a Silver EXCEL Award from the Association Media & Publishing, in the category "Journals: Feature Article." EXCEL Awards are presented to the finest media products and publications in the industry, and the competition is strong. I am very proud of this achievement, both for the article

and for the journal. My heartfelt congratulations to the authors.

In This Issue

The first article in this issue, written by Kevin Garrison, explains in detail why it is important for universities to have a usability lab, and how universities can design and implement such a usability lab at relatively low costs. In his tutorial, he draws on the specific experiences he had implementing a usability lab at Angelo State University.

The second article is written by Nicole Loorbach, Joyce Karreman, and Michaël Steehouder. They focus on the motivation and encouragement of elderly people who must use modern technological devices and their manuals. Specifically, they investigated users' reactions to two motivational elements that might be added to user instructions: verification steps and personal stories. They conclude that both elements appear to be acceptable to elderly users.

The third article, by Hans van der Meij and Jan van der Meij, discusses eight general guidelines for instructional videos. Video instructions are increasingly popular, and the phenomenon therefore calls for systematic research and analysis within the domain of technical communication. In last year's volume, Jason Swarts already presented guidelines based on an analysis of YouTube videos. In this issue, Van der Meij and Van der Meij take a more theoretical perspective. They present and illustrate guidelines based on instructional theories and tested in empirical research.

Designing and Implementing a Low-Cost Usability Testing Laboratory: Theoretical Justifications and Practical Considerations

Kevin Garrison

Abstract

Purpose: To share advice about how to create a low-cost usability testing lab based on the results of a year-long process of acquiring funding for a lab that supports Angelo State University's faculty, staff, and students.

Methods: Literature review of usability testing labs, trends, and theories; a case study of designing and implementing a usability lab.

Results: While there are numerous descriptions and justifications for labs in usability textbooks (Barnum, 2011; Rubin & Chisnell, 2008), Web sites (Nielsen, 1994), and articles (Potosnak, 1990; Blatt et al., 1994), changes in usability technology and decreasing prices allows for the development of new, cost-efficient laboratories in locations that have historically not contained labs, such as small university campuses. This article shares how Angelo State University created an up-to-date, personalized, on-campus lab based on past and contemporary trends in usability testing.

Conclusions: A usability lab on a university campus is possible to build, even with limited funding. Moreover, a step-by-step guide reveals that there are 1) strong theoretical reasons for constructing a usability lab, and 2) practical solutions for how to implement a design.

Keywords: usability testing, usability lab, costs, lab design, technical communication programs

Practitioner's Takeaway

- Designing and implementing a usability testing lab is practical and potentially doable for university members and practitioners.
- A lab can potentially be a valuable space for supporting usability research.
- The costs of usability labs have decreased immensely due to digital components, high-tech usability software, and low-cost eye trackers.

Designing and Implementing a Low-Cost Usability Testing Laboratory

Introduction

The prognosis for future careers in technical communication has been positive as of recent years, with *US News* naming “technical writing” one of the top 50 careers of 2011 (Grant, 2010) and the U.S. Bureau of Labor Statistics (2013) predicting an 8% growth in jobs for technical writers and editors from 2008 to 2018.

Similarly, the field of user experience—with careers as usability engineers, usability specialists, usability analysts, usability testers, usability researchers, and heuristic evaluators—has seen a similar positive outlook with *US News* naming “usability experience specialists” one of the top 30 jobs in 2009 (U.S. News Staff, 2008).

While usability and technical communication have not always considered to be directly related, largely because “usability” is an interdisciplinary concept, Redish (2010) has argued that their pasts and futures are intertwined, and numerous textbooks introducing students to technical communication include chapters on usability (Anderson, 2007; Johnson-Sheehan, 2010). The trends to merge technical communication with usability trends can be seen, also, in a number of institutions which have been attempting to prepare undergraduate students for potential careers in usability. In Harner and Rich’s study (2005), nine of the 80 programs explored offer courses in usability, and in Yeats and Thompson’s study (2010), several of the 143 programs surveyed have a direct focus on human-centered design, usability, and user experience design. Individually, a number of institutions, such as Texas Tech University (2013), the University of Washington (2013), and Minnesota State University Mankato (2013), offer undergraduate technical communication courses in usability, usability testing, and usability design.

Responding to these trends, the Technical and Business Writing program at Angelo State University (a division II university with under 7,000 students) created a senior-level course (ENG 4365: Usability Testing in Technical and Business Writing) as one of the degree requirements for students working toward a B.A. in English with a specialization in technical and business writing. Offered for the first time in the spring of 2011 (Courses and Faculty, 2013), the course description states that the course provides:

An overview of usability testing (testing of products, product documentation, and web sites) procedures in technical and business writing, including the construction of a usability testing lab, practice at conducting usability tests through a service-learning project, and methods for reporting usability findings to clients. (Garrison, 2013)

During its first offering, the class attracted sixteen students from a variety of majors, such as Marketing, Computer Science, and English, who took the course from January to May of 2011. The capstone project of the course was for students to divide into groups of three or four, contact a client from either the university or the local community, and conduct a discount usability test on a small-scale project that, ideally, was in an early stage of development.

To insure the highest-quality instruction, the author, in conjunction with the English Department, spent more than a year, beginning in the summer semester of 2010, researching, designing, and acquiring funding for the creation of a usability testing lab to insure the success of the course while still allowing for the possibility of the lab being used to assist faculty in their research, staff in their support of university materials, and local community in their projects. In researching the lab, the author drew from several individuals who have undertaken to describe the process of designing and implementing a usability lab. Sources were consulted that focus on industrial laboratories—for companies (Sazegari, 1994), for computer software testing (Potosnak, 1990), and for a user-centered “feel” (Blatt, Jacobson, & Miller, 1994). The most helpful sources were Barnum’s (2011) chapter on where to conduct usability tests and Rubin and Chisnell’s (2008) description of several different layouts for one room testing, multi-room testing, and for remote testing. As well, a number of online sources were used to inspire a design for Angelo State University’s context (Koyani, 2006; Scanlon, 1999; STC, 2013). While most of these descriptions are helpful for providing context-specific ideas or general layout suggestions, most of these sources were not written for university labs at mid-sized institutions; many were written between five and fifteen years ago; and oftentimes, they describe theories, trends, and costs that are outdated.

This article shares a case study of one institution’s attempt to keep pace with usability trends and develop a

lab of their own. The rest of this article describes Angelo State University's four-part approach to designing and implementing a usability testing laboratory by first, inserting the lab as an important component to the twenty-first century university; second, designing the lab and explaining the logistics behind choices; third, populating the lab with technologies and analyzing costs; and finally, preparing the lab for course instruction and university availability.

Step 1: Why a Lab? Arguing for a "Space"

Some trends in usability testing suggest a movement away from laboratories, as some research has shown that it is more efficient to conduct remote tests for target audiences who are not always local (Hartson et al., 1996), more helpful to incorporate usability testing throughout the life-cycle of a product outside of the confines of a lab (Palmiter, Lynch, Lewis, & Stempski, 1994), and more user-friendly to conduct onsite testing (Andrzejczak & Liu, 2010). In this intellectual landscape, the obvious concern becomes whether a laboratory, which can often be expensive, is necessary and financially justifiable. The author maintains that it is for several theoretical and practical reasons.

First, in the context of the university, several schools have adopted usability laboratories as a way to provide an incentive for recruiting students, supporting user experience research, and offering technologies to support public, private, and educational research endeavors. Of course, labs do not have to be housed in any particular department or with any particular design. Currently, labs of all different types are located in a variety of university locations, such as a traditional lab in a technical communication and rhetoric program (TTU, 2013), a video gaming lab sponsored by gaming giant THQ (Radd, 2010), a one-room laboratory in a library (University of Utah, 2013), and a lab that supports a worldwide research team in a department that offers degrees in human factors (Bentley University, 2013). User experience research—as having ties to the cognitive sciences, to technical communication, to computer science, to information and library sciences, and to business and marketing—supports numerous interdisciplinary studies and academic programs. As such, *any* lab on campus is potentially better than no lab on campus since it provides faculty, staff, students, and community members with an ability to conduct

tests. And for universities with no labs, technical communication programs remain in a strong intellectual tradition that makes advocating for labs easier, largely because they are one of the few academic fields that focus on the user (Carter, 2005).

Secondly, also in the context of the university, a university lab can help prepare students for workplace trends. Numerous companies have laboratories for testing, including Nielsen's outdated list of 13 companies that have labs (1994) as well as a number of technology giants, such as Microsoft (2013) and Google (2013). Even a quick glance at any major company Web site, such as Sony (2013) or Apple (2013), reveals numerous jobs in user experience research—oftentimes including a need for working knowledge of usability lab technologies and several years of experience in a laboratory environment. Of course not all areas need new labs. Larger cities such as Austin, Texas already have several independent usability laboratories available for contracts and testing, such as Human Interfaces (2013). Moreover, labs in other cities can be found via a search at Quirks.com (2013) which provides a list of numerous usability labs available nationwide, though often within the context of market research. However, for several isolated populations, such as in a location like San Angelo, Texas, the closest industrial and university labs are over three hours away. Building a small, low-cost laboratory remains a more viable option for exposing students to workplace trends in user experience research rather than traveling to a larger city and renting an existing lab.

A third argument, and perhaps the most important argument, is that the presence of a laboratory, as Rubin and Chisnell (2008) suggest, helps make the abstract concept of "usability" into a more tangible and implementable idea. As many technical communicators can attest, an initial mentioning of the word "usability" tends to garner a confused look from individuals unfamiliar with the concept until the idea is put into more practical terms, the most famous being the oft-used example of "everyone has experienced frustration while programming a VCR/DVR; hence, a need for usability." Describing usability as the "absence of frustration" (Rubin & Chisnell, 2008, p. 4) or in the five part MEELS (memorability, errors, efficiency, learnability, satisfaction) acronym (TTU, 2013) quickly excites anyone who is interested in working with technology, business, or psychology since the elephant

Designing and Implementing a Low-Cost Usability Testing Laboratory

in the room for studies of technology has been, for years, that technocracy and capitalism both have largely created a world that is not designed with *people* in mind (Feenberg, 1999). Usability testing strikes a human element in discourse about technology as it allows for individuals to be in a dialogue with the engineers, programmers, and other producers of technology rather than being regulated to the fringes of technological discourse (Johnson, 1998). As such, a lab invites a metaphorical and literal “space” in which individuals can envision the testing process through the use of physical labs and lab technologies.

In the context of the university, advocates of usability have the difficult task of making the user relevant to faculty, staff, students, and community members when they lack access to a space for testing. As such, usability can largely only exist as an *ideal* that has no practical outlet. As a typical example, consider instructors teaching usability in a Web publishing course that uses service-learning to accomplish its goals. As Schriver (1992) has argued, implementing usability testing into a curriculum has the ability to help students write better due to stronger awareness of their target audience; however, instructors in Web publishing courses have to be relatively creative with usability instructional methods because merely sharing with students the most common trends in usability does not make usability a tangible concept. One common usability instructional method for Web design is to share tips or provide heuristics to follow, such as the “guiding principles” (chapters 1-5) found in Krug (2006) or the advice offered by Nielsen and Pernice (2010) from their eye tracking studies, but such are limited largely because advice and heuristics don’t directly access actual users of a new or revised site. Another common solution for instructors is to require workshops where peers serve as potential members of the Web audience and help to bridge the gap between designer and user, but, of course, the findings are somewhat limited to whether the peers are members of the user profile. Other options suffer similar shortcomings, such as requiring students do onsite or remote testing of their early or final drafts of Web projects, which can rarely succeed due to lack of student accessibility to technological resources. At best, teachers can only require students to conduct site visits, interviews, or focus groups, which, of course, provide user feedback, but are limited in scope, depth, and data. As such, any teacher who prioritizes usability

in a classroom can mostly only prioritize it in theory, not practice, thereby exposing students to the potential power of usability testing. A physical lab, with its fixed location and available resources, allows students to conduct, at minimum, formative tests (Rubin & Chisnell, 2008) on early versions of their Web projects, and at best, summative and validative tests (Rubin & Chisnell, 2008) to insure that their projects are fully functional for their target audiences.

Likewise, staff and faculty members face a similar problem. As universities continue to upgrade to new content management systems, redesign Web sites, create promotional materials, develop handheld applications, and generally adapt to a twenty-first century world of technology, usability becomes an ever-increasing need to insure that potential students, prospective students, alumni, and other university participants can engage with a world increasingly centered on information. Without a lab environment, usability can largely only serve as an academic theory that can rarely be realized, primarily because of lack of resources and access to information about usability. The lab functions, conclusively then, as a “hub” for encouraging university members to adopt usability as a practical and implementable goal for making their projects accessible to users.

A final reason for designing and implementing a usability lab is simply that university participants need access to usability technologies since many lack offices spaces, laptops, software, quiet spaces, and other resources necessary to do testing. On the course-level, the adoption of ENG 4365: Usability Testing in Technical and Business Writing at Angelo State University can largely work only if students can *do* the tests—a question of utility that is potentially answered by a laboratory space. While Angelo State, as do most campuses, currently has numerous computer laboratories that are used for classroom instruction, student meeting places, and extracurricular workshops, none of these computer labs were sufficient for the needs of the course for several reasons. First, most computer labs contain up to 25 computers in a large room that are designed in such a way as to focus on instructors and a projector screen/white boards; as such, the design of the rooms are largely unusable for small group testing. Second, the labs are mostly used for course instruction, and as such, they are frequently occupied from 8:00 a.m. to 5:00 p.m., thereby disallowing a conducive time for testing with

real-world participants. Finally, even if students were to access the labs before or after hours, the technologies of the lab are not conducive for conducting usability tests as they largely only contain desktop computers with basic software, such as MS Office 2010 and Adobe CS 3; they did not have camera/microphone technologies, screen-capturing software, usability software, or video editing tools. A lab, then, responds to these three problems by allowing for a quiet meeting space for students as they collaborate on projects, design tests, conduct tests, analyze data, and prepare to present findings.

While not all campuses or programs have an explicit need to develop labs for specific courses in usability, a lab is not just limited to functioning as a course tool; it can also support faculty and staff as they conduct research on their local projects. Purdue University, for example, conducted a usability test of their famous Online Writing Lab (OWL) through online tests conducted in the Writing Lab (Salvo et al., 2006). Harvard University (Pierce, 2005) and the University of Alberta (2003) similarly conducted extensive testing of their new university Web sites before launch. As well, the University of Washington (McDavid et al., 2008) conducted a test on their intranet service “Educational Outreach Network.” Several university library Web sites have also been analyzed, such as Northern Illinois (VandeCreek, 2005) and Georgia Tech (King & Jannik, 2005). In the UK, the Jennie Lee Research Labs support individuals interested in university research (2013).

While universities have striven to make their materials more usable, numerous academic and non-academic departments do not have access to technologies that usability labs are famous for—usability software, video cameras and tripods, eye tracking hardware and software, screen capturing software, video editing software, software that allows for remote viewing of tests, accessibility software, and more. As such, while faculty and staff might have computers and an office space to do testing, these spaces are not guaranteed to be quiet, nor are individuals guaranteed to have access to the correct technologies and appropriate resources. Financially, universities also cannot justify having to purchase numerous, identical technologies for each department so that faculty and staff can conduct tests sporadically as projects emerge. A lab minimizes university costs by making a *one-time* purchase with few recurring costs while still encouraging usability throughout departments.

Step 2: What Type of Lab? Designing the Layout of the Lab

Assuming that a usability testing lab *is* appropriate, as argued in the previous section, the task becomes defining what one means, specifically, by a “lab” as well as defining a context for a lab at in a twenty-first century university. Numerous designs exist for labs—each meant to address specific contexts with different users and purposes. The challenge for Angelo State was to create a design that served its four primary audiences and purposes, which were: 1) to insure that the lab at Angelo State was appropriate to support ENG 4365 and its students while they worked on individual and small group projects, 2) to allow faculty to conduct usability research on their projects, 3) to give staff access to usability technologies as they explored problems with university materials, and 4) to encourage individuals from the local community to engage with questions of usability. This section provides an overview of the different types of lab designs as found in the research, explains the limitations of each design as it relates to Angelo State’s context, and then provides the solution that the author devised.

The Portable Lab

A usability “lab” can be defined by either access to a testing space or testing technology. In terms of technology, the cheapest lab can be created in real-time with nothing more than a pencil and paper to draw out designs, test paper-prototypes, and take notes. For more complex tasks, however, some types of usability, such as Web usability testing, game usability testing, and document usability testing, require more complex technology, such as a laptop with a built-in Webcam and microphone, a screen-capturing program, and office software. As such, one potential lab design is to create a portable “lab.” Portable labs can either be pre-fabricated, such as Noldus’ (2013) portable usability lab (see Figure 1), or they can be designed and constructed for individual needs, such as the University of Georgia’s “Luggage Lab 2000” (1995).

While a portable lab was considered for Angelo State, the primary concern with a portable lab came down to one problem: it does not meet the needs of ENG 4365. Students conducting projects could (in theory) each check-out a portable laptop at the beginning of each semester, take the laptop onsite,

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conduct tests, analyze data, and then create a report and presentation of their findings; however, such would require a number of portable labs—at least four per semester—in order for each group to be able to conduct all their tests. Moreover, several other irreconcilable problems led to rejecting the idea of a portable lab, including the following:

- High risk for damage of technologies,
- Redundancy of costs by having several identical “labs” that students would need to check out at the same time when group projects were in place,
- Lack of a physical meeting space for student groups,
- Need for group members to use the laptop simultaneously,
- Problems with infringing on participant and tester spaces,
- Lack of student *ethos* in convincing clients of the validity of findings and participants in the validity of the tests,
- Difficulties with recruitment when a physical space is not present (Seffah & Habieb-Mammar, 2009).

The Traditional Lab

The traditional lab was also considered. As described by Seffah and Habieb-Mammar (2009), the traditional lab separates two rooms with a one-way mirror and sound-proofs the walls (see Figure 2). One room is designated as the “observation area,” where clients and testers observe the tests, while the other room is designated the “testing area,” where test participants and moderators gather to conduct the tests. In the most expensive labs, oftentimes a third room (Rubin & Chisnell, 2008) serves as a “lobby area,” where test participants gather to sign forms, wait for the tests to begin, and consume food and drink, and sometimes a fourth room serves as a “control area” where technicians control the technology.

A traditional lab was considered for Angelo State’s needs, but was rejected for several reasons, including the following:

- A potential for high anxiety level of test participants from being observed through a one-way mirror which creates an “impersonal environment” (Rubin & Chisnell, 2008, p. 110),

- Communication difficulties that emerge from separating the moderator from observers and other testers,
- The cost of the mirror and the difficulty of sound-proofing it,
- Large amounts of “unused” space that is difficult to justify financially for small tests.

The Remote-Room Lab

In another version of the “traditional lab,” the remote room lab works by separating the observation room and the testing room and connects them via a network—a digital solution to separating the two rooms. A remote room set-up allows for the projecting of tests onto a projector screen in the observation area so that dozens of test observers can “watch” the tests remotely without actually being confined in a room behind a one-way mirror. By using digital software, such as Morae Observer (2013), testers, clients, and other individuals with a vested interest in the results can observe the tests without actually being in the same space.

The remote-room lab has similar disadvantages to the traditional lab, but without the added expense of a one-way mirror. The most problematic aspect of the remote-room design, though, is that few tests, especially in a course environment for Angelo State, will ever need to have more than just a few observers at a time.

The One-Room Lab

A one-room lab was eventually adopted for Angelo State, though elements of a remote and a portable lab were used. Based on Rubin and Chisnell’s (2008) description, in a one-room lab, the clients, testers, and participants are all placed in close quarters with the moderator of the test situated either next to the participant or at a distance on a second computer. Angelo State’s lab (see Figure 1) was an 8 foot by 18 foot storage closet area that was transformed into an office space and divided into three components: the testing area, with a desk, a desktop computer, and camera technologies for filming; an observation area, with a table and multiple chairs for individuals wanting to observe the tests and annotate the test via the white board; and a work/storage area where individuals could process video files on a second desktop and also observe tests via a LAN connection to the testing computer.

The one-room lab set-up allows for the cheapest (and most flexible) way to conduct numerous types of

tests while still meeting all the requirements of the four possible test scenarios and more:

- The lab serves as a meeting, testing, and work space for campus testers—especially students in ENG 4365 who conduct mostly individual tests or small group (2-4 members) tests on digital media. For the group projects, students typically break into three roles—a moderator, one or two note-takers, and a technician. When combined with the participant, the maximum number of people in the room at any one time is five individuals. The 8 foot by 18 foot space was ideally suited for this small group testing.
- The space allows for greater *ethos* for student testers when inviting participants to conduct tests.
- The design maximizes the use of space by not having entire rooms dedicated to observation, while also allowing for testers and moderators to have a close connection to participants, which encourages more think-aloud.
- If individuals wanted to conduct onsite testing, the filing cabinet houses a laptop with a built-in Webcam and microphone that would allow for basic testing away from the lab.
- Both desktop computers were connected to the LAN, which allowed any of the current computer labs on campus, with their projector set-ups, to serve as a remote observation room when using Morae Observer (2013). This potential allows for large numbers of individuals to observe the test simultaneously.

- The white board and round table allows for paper-prototyping (Still, 2010).
- Both desktops could be used simultaneously (as well as the laptop, if set up on the observation table) to allow for up to three synchronous tests. The three computers are also all connected to the internet to allow for remote testing, as well.
- The lab serves as a hub and storage for technology for 1) local tests, 2) networked tests, 3) checking out technologies for onsite tests, and 4) conducting paper-prototyping/whiteboarding.

While this laboratory set-up has its own limitations, such as the lack of storage space and the tendency for participants and observers to feel overcrowded at times, the end result maximized *efficiency* for all four potential test scenarios—student testing, faculty testing, staff testing, and community member testing.

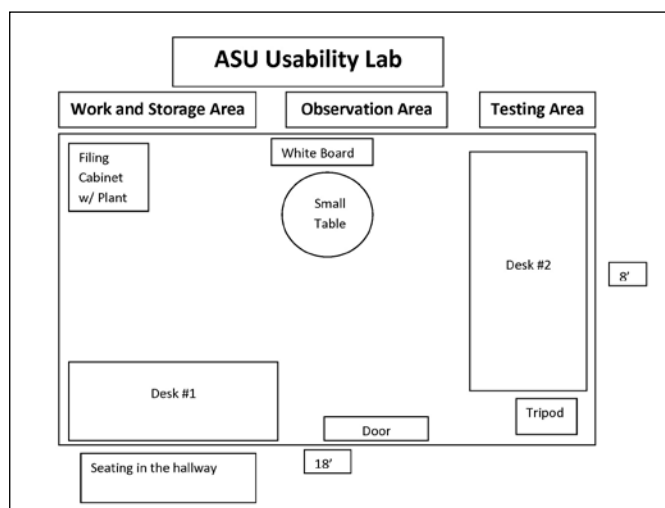
Step 3: What Are the Costs of a Lab? Populating the Lab with Technologies

A number of the technologies have already been explained in the previous section, including the physical technologies and some of the basic computer set-ups. This section, therefore, will focus on three aspects related to cost: (1) deciding on physical components of the lab, (2) purchasing usability components, and (3) acquiring funding. Because costs of technologies are constantly in a flux, the following sections will mostly only share total cost of technologies rather than the cost of individual pieces.

Room Renovations

The department made an 8 foot by 18 foot storage closet available for lab use, and it was renovated in several phases. First, we removed the previous technologies of the room, including transferring physical technologies and boxes of books to another storage area (and in some cases, eliminated unneeded “stuff” that had accumulated over time). Second, we submitted a request to Angelo State’s Facilities Management Office to overhaul the room and bring it up to code. Facilities Management workers spent several months completing several fundamental requests—repainting the room, repairing a hole in the sheetrock, laying new carpet over the older tile,

Figure 1. Overview of Angelo State’s Usability Lab



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repairing ceiling tiles, adding LAN connections, hanging the clock, and redirecting air flow to allow for the room to be cooled and heated.

Sound-proofing is an important part of a usability lab, and perhaps the most important part (Ovo Studios, 2013). Without being able to control loud and unpredictable outside noises when recording, much of the test data could be questioned or invalidated. While sound-proofing material in between the walls would be ideal, Ovo Studios (2013), a company that designs labs, argues that a “sound-resistant” lab is more realistic than a “soundproofed” room since ambient noises, such as conversations from adjoining rooms, are not likely to interfere with the test or the test results. Because Angelo State’s room contained a thick, wooden door, the room itself had no windows, and the walls were adjacent to three areas that were not noise-heavy, we made no additional steps to reduce levels of noise in the room.

Renovating the room cost approximately \$5,800.00.

Physical Lab Components

Once the room was prepared, we acquired the following items to populate the room:

- Five ergonomic chairs (one for the participant, one for the moderator, and three for potential observers)
- Two six foot desks (one for the observation computer and one for the participant’s computer)
- One small table (a piece that serves as a space for signing forms, doing paper-prototyping, and as a meeting area for observers)
- One whiteboard (hung above the table to serve as a place for generating ideas, sharing instructions with users, or doing paper-prototyping)
- One poster board (hung in the hallway for announcements and advertising the lab)
- One filing cabinet (acquired from a storage closet and used to store physical technologies)
- One plant (donated from a lab assistant)
- One picture frame (for a “Policies and Procedures” to be hung on the wall)

The cost for all of these components was approximately \$5,000.00.

Usability Components

After the room was prepared and the physical technologies acquired, we purchased the following usability technologies with the corresponding justifications:

Computers. Because of the cheaper cost and flexibility of digital technologies in comparison to analog technology, Angelo State Usability Lab is entirely digital; there are no televisions, switchboxes, and analog video recorders. Instead, all video is recorded by using two standard desktop computers. We purchased both computers through a university contract with Dell, and both were identical in their specifications, which included multi-core processors, large hard drives, several gigabytes of ram, memory card readers, and rewritable DVD drives. Few computers on campus are Macs or use Linux-based operating systems, so for consistency, as well as compatibility with usability software (see below), we installed Windows 7. Both computers are connected to Angelo State’s local area network (LAN).

While most contemporary desktop computers should work for lab usage, the most important aspect for the computers was a dual monitor set-up, which also required the purchasing of video cards. The dual monitors allows for advanced video editing, more collaboration from students on projects as they do multi-tasking, and the use of the eye tracking software (described below).

As well, we ordered a third computer—a laptop—with similar specifications for the possibility of having another computer available for note-taking and data analysis. The laptop is more flexible in terms of placement, and it has also been used for demonstrations (using a projector and VGA cable) and conference presentations. Also, because the computer has a microphone and a built-in Webcam, the computer is also able to serve as a portable lab, though check-out is limited to faculty and staff members.

The computers and printer cost approximately \$3,750.00

Audio/Video Equipment. We purchased four cameras—two Webcams with 720p recording capability for each desktop computer and two Sony Handycams with 480p recording capability (2013). The Webcams are useful primarily for conducting Web site usability, software usability, and other computer related tasks, largely because they film the individual’s face as they navigate a digital environment. As well,

the two Handycams allow for more portable video recording and, when combined with tripods, are able to record more complex task scenarios, such as filming participants' hands, legs, or body movements. The Handycams are standard definition (SD) cameras and film in a maximum of 720X480 resolution; this resolution was chosen largely because it allows for widescreen filming but without the extreme computer processing needs to work with high definition video (720 or 1080). While cameras built into the walls would have been ideal, as they are for many high-tech usability labs, the ease of movement that comes with Webcams and portable cameras dictated the purchasing of these cheaper cameras. Finally, we purchased 16 gigabyte memory cards for use with the cameras.

For audio, all four cameras have a built-in microphone, but we also purchased three headsets that include microphones. These headsets allow for both silent listening as well as direct recording through a microphone placed in front of the participant's mouth.

The audio and video equipment cost approximately \$1,000.00

Eye tracking. We purchased an S2 eye tracker from Mirametrix (2013) in order to allow insights into the visual attention of users who work on computer technologies. The S2 model connects to the computer using a USB port and can be placed underneath the computer monitor, much like a Nintendo Wii sensor bar. The eye tracker works by using infrared cameras that are calibrated with the user's eyes by doing a nine point check on one of the screens. Once calibrated, the user has a relatively free amount of movement as the cameras are unobtrusive and are able to record an AVI file of what the fovea of the eye focuses on during a given test scenario. As well, the Mirametrix S2 eye tracker comes with software that allows for a second monitor to reveal what the user is observing on the first monitor or the ability to stream the video over the LAN to a second computer. Because of this advanced capability, the dual monitor set-up allows for a test user to accomplish task scenarios while the moderator can tilt the second monitor toward him/herself to observe the user's eye movements in real time.

We wanted an eye tracker for the lab primarily as a way for students and myself to conduct exploratory research. Students in ENG 4365 for the spring semester of 2013, for instance, conducted their first project of the semester using the eye tracker on different media (i.e.

video games, Web sites, advertising, digital literature, and more). I required each student to conduct a test over "how does an Angelo State student _____" with each student filling in the blank with activities such as "find Waldo," "play online Bingo," "read a poem," or "read subtitles in a foreign film." These studies allowed for students to get exposure to the lab, practice moderating tests, learn about data analysis, and present their findings. The students shared their findings using a standardized poster, which I placed in the hall surrounding the lab as a way of advertising the course and sharing insights into human-computer interactions.

The eye tracker cost \$4,000.00.

Usability Software. Through a campus license agreement, all three computers were able to have the standard Microsoft Office (2013) software which includes MS Word, MS Excel, and MS PowerPoint. As well, the computers were able to run IBM's SPSS (2013) without any extra expense.

Most importantly, the lab obtained a licensed copy of Morae (2013), which was purchased due to its ability to collect large amounts of quantitative data. Morae allows team members to construct test scenarios, run unmoderated tests, capture video streams from both the monitor and the Webcam, create highlight videos, and mine large amounts of data, including mouse clicks, mouse distance moved, Web sites viewed, and more. For digital tests, such as Web site usability and software usability, Morae is one of the most comprehensive software programs available. Because we were limited to PCs, we did not consider Silverback 2.0, which is usability software for Macs.

Because Morae is a relatively complicated software package and might have more options than a simple test might require, each computer also runs a screen capturing program called Camtasia (2013). Camtasia 7 allows the user to perform task scenarios while Camtasia records both the screen as well as Webcam footage. Camtasia also allows for video editing of both video streams for a picture-in-picture highlights video.

We also purchased video editing software. For ENG 4365 group projects, I require students to capture video from one of four sources: 1) the Web cameras, 2) the video cameras, 3) Morae/Camtasia, or 4) the eye tracker. Then, the students are required to produce a highlights video (Yeats & Carter, 2005). Because the four sources save the files in a variety of formats (i.e. the video cameras save .MOV files while the eye tracker saves

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Figure 2. Angelo State's Usability Lab



WMV files), we purchased Adobe Premiere Elements (2013) for video editing since Premiere Elements works with most file types while also not overloading the students with more extensive software, such as the full Adobe Premiere software. Windows Movie Maker Live (2013) was also downloaded free from Microsoft's Web site to allow for students to have an alternative and more basic program for video editing, though Movie Maker is compatible with fewer file types.

For accessibility issues, we purchased Natural Reader (2013), a text-to-speech program, in order to read written text aloud for people with vision impairments. We also purchased Dragon Naturally Speaking (Nuance, 2013) as a speech-to-text program in order for an alternative method of inputting computer text. We plan to buy other accessibility software as necessary; for instance, one visually impaired student recently required the use of ZoomText (2013) which we installed on both computers.

The software cost approximately \$3,000.00

Total Costs. Altogether, the English Department at Angelo State spent under \$23,000.00 for the entire cost of the usability lab (see Figure 2). While on one level, this amount seems relatively high, there are several ways to cut costs. By purchasing fewer cameras and computers, only one licensed copy of each software package rather than multiple copies, and forgoing the more expensive costs, such as the eye tracker and new furniture, a department could fund an entire lab for under \$10,000 if a sound-resistant space was available. Moreover, the cost of digital technologies is continually decreasing. Texas Tech, for instance, has recently developed an eye tracker for under \$1,500 (2013).

On hindsight, since construction and use of Angelo State's lab, the most unnecessary expenditures have

proven to be: (1) the second cameras since most tests require only the use of a Webcam and a back-up video camera, (2) the laptop, since its use has been limited to faculty and staff, (3) Camtasia, since most testers have favored the use of Morae, and (4) the accessibility software, since none of the testers have required the use of speech-to-text or text-to-speech. Unsurprisingly, the most inexpensive items have also proven to be the least necessary. Most of the extreme costs were directly related to renovating the room and purchasing furniture. If an office space and second-hand furniture was available, then simply purchasing a few computers, cameras, and software for a few thousand dollars would be more than sufficient for conducting low-key tests.

Acquiring Funding

Acquiring funding at Angelo State was possible due to the support of the dean of the college. Because Angelo State has recently committed more funding to programs that are growing and developing desirable courses and laboratories, funding was achieved by writing a proposal for faculty development grant money, which was read by the dean of the college and then funded via the college's money.

There are, however, other ways to raise funds for designing a lab, such as:

- Contacting the university about faculty development grant opportunities
- Contacting department heads and college deans about potential funding available
- Identifying external grant opportunities through university resources. At Angelo State, the Office of Sponsored Projects provided information about such opportunities
- Contacting the university's warehouse or IT support for information about furniture, carpet, computers, and other items that could be obtained for free or at a low cost

Contrary to intuition, once you have the space, it is NOT as expensive to populate a laboratory with technologies provided that the context is similar to Angelo State's context and provided that a "state of the art" laboratory is not needed. The primary cost for the author was more in terms of time than money—time for conducting the research, writing the proposal, designing a functional laboratory to fit with multiple

university contexts, and doing the final part—finalizing all the details for making the lab functional, described in the following section.

Step 4: What Is Needed to Finalize the Lab? Preparing the Lab for Use

Once the lab was completed, the author spent several months preparing the lab for use. The overall process of preparing the lab for use can be broken down into five parts.

Setting up the Lab

During the summer and fall of 2010, the author spent most of June through December researching justifications for a lab, writing a grant proposal, meeting with the department head, sketching out several possible configurations for labs, meeting with Facilities Management, identifying the core users and purposes of the lab, requesting quotes, and drafting a preliminary budget. Once the proposal was accepted in September of 2010, work began on renovating the room.

Once the room was prepped, Angelo State's department of English was fortunate enough to contact the Angelo State's Information Technology Office and request that all the computers be set up. After the hardware has been set up and the computers connected to the LAN, then the primary obligation becomes installing all the security measures, allowing testers access to the hard drive, and installing the software. Several hours were then spent testing each software package and insuring that any "bugs" were eliminated from the system.

Setting up the lab was possibly the most difficult step of the entire project. We were able to renovate the room during the latter part of the fall semester of 2010, and the room was ready to be used during the early part of the spring semester of 2011; however, purchasing the furniture proved to be a several month process. Because students in ENG 4365 needed to conduct tests for their clients while we were still setting up the lab, we were forced to borrowed furniture from several storage closets on campus as a temporary measure so that we could set-up and use the computers and cameras to perform tests. The furniture arrived while student were working on group projects, and we had to shut down the lab for a day as we removed all the temporary furniture and set-up the permanent furniture.

Overall, the set-up of the lab took a complete year from conception to final implementation.

Advertising the Lab

Because usability is a field that is not always well known outside of technical communication and certain business areas, the use of the lab is largely dependent upon marketing done by the director in charge of the lab. The author has found the following ideas helpful in spreading the word about the lab:

- **Develop a Web site**—The Web site at Angelo State serves not only the purpose of advertising the lab, but it also advertises the class, contains forms for download, and provides tutorials for people unfamiliar with concepts of usability and usability testing. See <http://www.angelo.edu/usability> for the current Web site.
- **Make connections**—Contact individuals on campus connected to fields closely related to usability, such as Psychology, Computer Science, or Business, in order to alert individuals to the presence of a lab.
- **Contact the local newspaper and the university journalism office**—By contacting the university or local newspapers, it is possible to get "free" advertising for the lab by alerting faculty, staff, students, and the community to the capabilities of usability testing. At Angelo State, one newspaper article in the local newspaper, written by a local journalist, provided several contacts and potential clients from the community.
- **Insure that university and faculty advisers are aware of the presence of the lab**—By having advisers aware of the presence of a lab on campus, they can direct students to the possibilities of taking courses doing research using the lab's technologies.

Advertising the lab is an ongoing issue. The Web site took over a week for us to develop content, and other advertising opportunities (such as interviews and presentations) take several hours each semester to continue educating new students, administration, and faculty/staff.

Developing Forms for the Lab

In addition to advertising the lab, several other forms might need to be created. Many of these forms can be

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downloaded at Angelo State's usability lab Web site:
<http://www.angelo.edu/usability>.

- **Covenant not to Compete**—In a university setting, consider drafting a legal document, preferably in connection with the legal offices at the university, that establishes the lab and/or the class as being useful primarily for university faculty, staff, and students—not as a competitor for local usability labs.
- **Client FAQ**—Consider creating a Client FAQ, especially if the lab will be used in conjunction with a course. A Client FAQ should provide ample information about what types of projects are applicable for usability testing as well as expectations for both students and clients.
- **Consent Form**—Draft a Consent Form that establishes the rights of the testers and the rights of the participants in order to alleviate any potential legal conflicts and to protect the rights of all parties involved. Also, establish where the forms will be stored. At Angelo State, we store electronic forms at the Web site, paper forms in the lab, and store all signed forms in the filing cabinet to maintain the privacy of the participants.
- **Video/Audio Release**—Draft a form that allows for the video and audio recordings to be used both for data collection and also describes the limits and uses of how the video can be used by testers. We store these release agreements in the same places as the consent forms.
- **Lab Policies and Procedures**—Consider drafting a document that establishes what is and is not allowed in the lab to prevent potential breaking/loss/theft of equipment and behaviors acceptable for lab use.

Researching and creating forms for the lab took several weeks. The author was fortunate to borrow drafts of these forms from different books (Rubin & Chisnell, 2008) and from existing resources on campus.

Applying for an IRB

As discussed by Rubin and Chisnell (2008), each university has different internal review board (IRB) requirements as it relates to research done with human participants. At Angelo State, the IRB officer deemed that all research conducted in the usability lab did *not* need an IRB because the research was conducted for

purposes of changing Web sites, software programs, brochures, and other written discourse. As such, the research is not being conducted on “human participants” so much as it is on the technologies themselves. At Texas Tech University, however, the director of their usability lab has applied for a “blanket IRB” which allows for all research conducted in the lab to be covered under the IRB process. Each university considering a lab should contact their IRB officer to determine the right process for them.

Researching and talking with the IRB officer took approximately one week.

Acquiring a Student Assistant

If funds are available (and even if they aren't), having a student assistant work in the lab allows for the director to focus on larger issues related to lab use rather than focusing on tasks such as scheduling, locking/unlocking the lab, equipment maintenance, and other tasks that could be done by a student worker. By having a paid student worker take care of the lab, the student gains valuable workplace experience and the director saves time.

The author was fortunate to be able to hire a student assistant for the spring semester of 2011. This student was able to prepare forms, manage scheduling of the lab, test the software, tutor users of the lab, and generally be the primary “go-to” person for lab use.

Conclusion

Usability, as a field and as a workplace trend, is only likely to grow as our world becomes increasingly centered on the production and consumption of information. To use Richard Lanham's (2006) concept, twenty-first century people bring limited attention spans to the ever-growing information networks, and as they interact with information in increasingly digital ways, via tablet PCs, cell phones, computer monitors, television screens, projectors, and more, the user experience expert and usability lab become increasingly important entities on each university's campus. Moreover, the practical benefits of a lab are equally obvious, such as providing insight into recruitment opportunities, saving money on larger projects, and eliminating frustration for individuals involved in university processes.

The lab has been in use at Angelo State for over two years, now. The course has filled each spring semester, and the students have conducted tests on everything from paper-prototypes of campus Web sites to validation tests of non-profit organizations in the region. One student was recently offered a job in quality assurance, and he credits his experience in ENG 4365 with helping him get the job. As well, faculty and staff on campus have conducted tests on portions of the university Web site, revised forms based on feedback from the lab, and conducted exploratory research on pedagogical tools, such as asynchronous software in a course management system. The author, as well, has continued to find ways of encouraging a campus-wide awareness of the importance of the user, being interviewed several times, conducting eye tracking studies, working on an undergraduate research project, presenting his research at several conferences, using the course as part of a university-wide push for service-learning, and doing formal presentations across campus to raise awareness of usability issues.

More than anything else, this article has attempted to reveal that building a physical “space” for usability is not as costly as it once was—largely due to the switch from analog to digital technologies, the dropping costs of expensive eye trackers, and the recognition that state-of-the-art labs are not always necessary. A space can be designed and created in roughly a year, but will be able to serve university participants for multiple years after a decent amount of start-up work. While a usability lab is not a necessary requirement for advocating for the user, its presence *does* create a memorable encounter for people unconnected with one of the primary goals of technical communicators—to place the user at the center of the design process and not at the periphery.

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Confidence-Increasing Elements in User Instructions: Seniors' Reactions to Verification Steps and Personal Stories

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Abstract

Purpose: Research shows that confidence-increasing elements in user instructions positively influence senior users' task performance and motivation. We added verification steps and personal stories to user instructions for a cell phone, to find out how seniors (between 60 and 70 years) perceive these confidence-increasing motivational elements. Verification steps allow users to check if a procedure was carried out correctly. Personal stories describe how a fictitious user succeeded in completing a procedure.

Method: The plus-minus method was used. Participants were asked to place pluses and minuses in cell phone user instructions to indicate their positive and negative reading experiences, and to explain their choices afterwards.

Results: Verification steps are regarded as other, common parts of user instructions by seniors. Nineteen out of 20 participants appreciate verification steps, and they mainly encourage providing these because they are expected to decrease doubts, and increase user confidence and satisfaction. Personal stories tend to stand out compared to other, common parts of user instructions. Thirteen out of 20 participants appreciate personal stories, which use is mainly discouraged for redundancy reasons, and encouraged for their expected positive effects on user confidence and motivation.

Conclusion: The use of verification steps and personal stories in user instructions seems acceptable to seniors. As a next step, it seems worth it to test for effects of these motivational elements on usability, user confidence and motivation.

Keywords: plus-minus method, motivation, confidence, seniors, user instructions

Practitioner's Takeaway

- Verification steps in user instructions are appreciated because they are expected to decrease doubts, and increase confidence and satisfaction.
- When seniors discourage the use of personal stories in user instructions, they mainly do so for redundancy reasons. When they encourage their use, they mainly do so for their expected positive effects on user confidence and motivation.
- Both verification steps and personal stories can be relatively easily added to existing user instructions; modifications to the existing instructions are not necessary. When offering these motivational elements in user instructions, technical communicators should present the elements distinctively, making it easy for users to skip them if they wish to.

Introduction

For a long time, user instructions were considered as purely instrumental documents: Instructions had to enable readers to perform tasks. And even though this still remains the main purpose of user instructions, views on how to accomplish this have changed over the years. The traditional view seemed to assume that when the instructions were correct, readers would automatically be able to perform the described actions. In other words, instrumental discourse alone should be enough for readers to reach their goals. Or as Moore (1997) stated: "Instrumental discourse does not persuade like rhetoric; it shows a user how to perform an action. ... Instrumental discourse does not necessarily use reasons or appeals to logic, to the author's character, or to the audience's emotions. ... Rhetorical communications and salespeople may persuade customers to buy specific hardware and software, but after the sale, the customers require no persuading to read and apply the installation and operating instructions. External circumstances obligate them to perform those tasks so they can use their new purchases" (p. 166).

The rhetorical view on the design of technical documents still assumes that above all, instructions should enable readers to perform tasks with the accompanying device. But in order to accomplish this, the instructions should motivate readers to start reading the instructions and to keep on reading once they have started doing so. Goodwin (1991) argues that "Audience motivation ... plays a vital role in effective technical communication. Specifically, a good technical writer must keep a reader reading long enough and carefully enough to become competent at specific tasks" (p. 100). Horton (1997) advocates a similar view, suggesting that technical documents should motivate readers, and that technical writers should take responsibility for making the reader notice, understand, and act on the information. Horton labels instructional documents that enable users to do and find as "friendly documents." These friendly documents present information clearly, make a case, and are readable. Horton labels documents that are enhanced by motivational elements as "seductive documents." Such documents impel readers to do: They show, teach, convince, and get read. According to Horton, "friendly documents allow access to information-if a reader is motivated and tries to find it. Seductive documents go further and supply the motivation" (p. 6).

Thus far, we have conducted two experiments studying the effects of motivational elements in user instructions (Loorbach, Karreman, & Steehouder, 2007; Loorbach, Steehouder, & Taal, 2006), which suggest that providing motivational elements in user instructions, and especially elements aimed at increasing user confidence, will be beneficial for users, and senior users in particular. The first study tested the combined effects of a variety of motivational elements in user instructions for a fixed, wireless phone, on usability aspects and students' appreciation for the instructions. The results showed that motivational elements led to a higher satisfaction with the instructions, but these elements did not have any effect on task performance. The participants in our second study were senior users, aged between 60 and 70. We asked them to perform a number of tasks with a cell phone. We decided to focus on this particular user group, because this large user group is often ignored in technical communication research (Lippincott, 2004). It is known that seniors are willing to use technology, and are even eager to learn, but training times are typically longer for seniors, and they may require more practice and assistance during training (Czaja & Lee, 2007; Naumanen & Tukiainen, 2007; Tsai, Rogers, & Lee, 2012). Designing user instructions that stimulate users' willingness and as such, their ability to perform the described actions is especially called for in greying societies, with increasing numbers of seniors who are less experienced with relatively new technology devices (Schwender & Köhler, 2006), and less likely than younger adults to use technology (Czaja et al., 2006). Providing motivational elements in user instructions may especially benefit seniors.

The results of the second study showed that providing confidence-increasing elements in user instructions not only improves usability aspects of the instructional text, but it also increases user motivation: Senior users not only performed better, but were also more motivated to keep trying in the face of difficulties when using instructions containing a combination of four confidence-increasing elements. These elements were based on Keller's (1983, 1987a, 1987b, 1987c, 1999, 2010) ARCS Model of Motivational Design. The ARCS Model provides strategies focusing on four objectives—(A)ttention, (R)everance, (C)onfidence, and (S)atisfaction—to make instructions motivational, in order to increase student motivation in learning and performance settings (Keller, 2010). As a next step,

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we will test whether applying individual confidence-increasing strategies to user instructions can produce similar effects. The current article describes seniors' perceptions of individual confidence-increasing elements in cell phone user instructions.

Motivational Design of User Instructions

According to Keller (1987a), "the first step in design is to create a list of potential motivational strategies for each of the [motivational] objectives. ... The next step is to critically review the potential strategies, and select the ones to be used" (p. 7). In our previous study (Loorbach, Karreman, & Steehouder, 2007), we created and tested for collective effects of three lists of four potential motivational strategies for the motivational objectives attention, relevance, and confidence. For example, to increase attention, we added colored headings and headings written as questions. To enhance perceived relevance, we added "What's coming up" sections focusing on the usefulness of cell phone functions. And to enhance confidence, we added "What's coming up" sections focusing on confidence aspects, and verification steps. The collective effects of the four confidence elements, and to a lesser extent of the four relevance elements, proved effective, so our next step is to critically review the effective strategies that were used, and select the ones to be tested individually.

Keller (1987a) provides five guidelines to help the selection process: "Motivational strategies should: (a) not take up too much instructional time, (b) not detract from the instructional objectives, (c) fall within the time and money constraints of the development and implementation aspects of the instruction, (d) be acceptable to the audience, and (e) be compatible with the delivery system, including the instructor's personal style and preferences" (p. 7).

The primary goal of this study was to investigate if motivational strategies are acceptable to the target group of seniors (guideline (d)). The results of the previous study showed that motivational elements had collective positive effects on task performance, but it is still unknown if users accept individual motivational elements as valuable parts of user instructions.

In selecting strategies to test individually, we tried to meet the other four guidelines. Our potential strategies should not take up too much instructional time, and add to rather than detract from the instructional objectives (guidelines (a) and (b)). We

only considered strategies that can be relatively easily applied throughout existing user instructions in order to make them motivational: By making it relatively easy for instructional designers to design motivational user instructions, chances increase they actually will (Keller's guideline (c)). And by looking for strategies that are as non-similar as possible, varying preferences of both technical writers and users are served (guideline (e)).

Apart from Keller's guidelines, we used Bandura's concept of self-efficacy to select strategies (1986). Bandura defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (1986, p. 391). So, a high level of self-efficacy means that users have confidence in their ability to perform a task correctly. Bandura described four sources of self-efficacy beliefs: "enactive mastery experiences," "vicarious experiences," "verbal persuasion," and "physiological states" (Bandura, 1997). We aimed at selecting strategies that meet the criteria of the first or second source of self-efficacy beliefs, since those are expected to affect self-efficacy beliefs most effectively.

We ended up with providing verification steps and providing personal stories as motivational strategies to test. Verification steps are extra steps at the end of procedural lists, which allow users to check whether the described actions were performed correctly. Personal stories describe how using a feature of the cell phone was a challenge to a persona, but success prevailed. Both verification steps and personal stories can be ignored by users who do not need or wish to read them, and used by those who do.

Looking back at the two views on designing user instructions (where the traditional, instrumental view advocates concise instructions focusing on effectiveness and efficiency, and the rhetorical view advocates also focusing on user satisfaction and motivation), verification steps are closer to the traditional view on designing user instructions, and as such, they would probably still go well with people advocating merely telling-like-it-is procedural steps; they seem to comply with well-accepted procedural lists, being an extra step at the end of such lists. Personal stories are closer to the rhetorical view on designing user instructions: These are far from common in the field of technical communication, but may positively affect user satisfaction and motivation.

Verification Steps

In our previous study (Loorbach, Karreman, & Steehouder, 2007), providing verification steps was one of four strategies aimed at increasing confidence. These strategies had collective positive effects on seniors' effectiveness in performing tasks, and on their persistence in trying to complete tasks (motivation). Verification steps are expected to stimulate what Bandura (1997) calls "enactive mastery experiences," in his description of the four principal sources of self-efficacy beliefs (pp. 79-115). This first and most effective source of self-efficacy beliefs serves as an indicator of capability. According to Bandura (1997), "enactive mastery experiences are the most influential source of efficacy information because they provide the most authentic evidence of whether one can muster whatever it takes to succeed. Successes build a robust belief in one's personal efficacy" (p. 80).

Keller (1983) also acknowledges the importance of successes in building self-efficacy, or in his words "expectancy" (which he later renamed "confidence"). In his explanation of the first strategy to increase expectancy ("Increase expectancy for success by increasing experience with success"), he states: "If a person has a generally low expectancy for success or a specific history of failure in a given area, then a series of meaningful successes in that area will improve the person's expectancy for success" (p. 419).

Van der Meij and Gellevij (2004), although not using the same terms, also link feedback—such as the kind provided by verification steps—to user confidence, and to motivation, when discussing Gellevij's (2002) dissertation on functions of screen captures in software manuals: "When users consult screen captures and discover that they are still on the right track, the pictures serve as positive feedback, which reinforces motivation. Especially for the novice user, this may be important to allay initial anxiety. Apart from checking progress, users can also use screen captures to verify whether the program has processed their input correctly" (p. 8). Verification steps are expected to serve in a comparable way.

By providing verification steps—where possible, meaning they are adding value—at the end of procedures, we hope to stimulate readers to actually experience successes, because these steps enable users to check if the described actions were performed correctly. Verification steps should first of all take away possible

doubts about whether or not the described actions were performed correctly. If success was the case, then verification steps are a confirmation of indeed having succeeded. In the opposite situation, verification steps will inform users that the actions were not performed correctly and as such, will allow for a retry and indirect success after all.

Personal Stories

Even though personal stories were one of four relevance-increasing elements in our previous study, which collectively positively affected seniors' effectiveness in performing tasks, we believe that personal stories can also be used as a confidence-increasing element. Bandura (1997) describes the second source of self-efficacy beliefs as "vicarious experiences that alter efficacy beliefs through transmission of competencies and comparison with the attainments of others" (p. 79). This source is better known as modeling. According to Bandura, "seeing or visualizing people similar to oneself perform successfully typically raises efficacy beliefs in observers that they themselves possess the capabilities to master comparable activities. They persuade themselves that if others can do it, they too have the capabilities to raise their performance" (p. 87).

So by focusing on how someone thought completing a procedure was somewhat of a challenge, but succeeded after all, personal stories should increase confidence. The nature of personal stories automatically calls for some focus on relevance, the second objective of the ARCS Model, as well: When someone describes his or her actions with a cell phone, the relevance of these actions to the user almost inevitably shines through. In our previous studies, personal stories focused on relevance, and on why a certain feature was useful to someone. This time around, the focus will lie on increasing confidence, and on stimulating users to feel that they, too, can perform certain tasks with the cell phone.

Research Questions

Our two strategies fall into Bandura's description of the first and second sources of self-efficacy beliefs, and they seem to meet four out of Keller's five selection criteria. In order to answer whether they also meet guideline (d)—"being acceptable to the audience"—more research is needed. We do know that our motivational elements, and especially personal stories, are not common in user

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instructions, but we do not know how seniors react to their presence in user instructions. Therefore, we set up a study to reveal seniors' reactions to our intended motivational strategies in cell phone user instructions, using the plus-minus method (cf. De Jong & Schellens, 1998). The plus-minus method involves participants placing pluses and minuses at text parts, and explaining their choices afterwards. We wanted to find answers to three research questions:

1. How do seniors regard verification steps and personal stories in user instructions?

Do seniors score these motivational elements as they would other logical, accepted, and in their view common parts of user instructions, indicating that these strategies are, too? Or do they score these elements differently than other parts of user instructions, indicating that to seniors, these are not regarded logical, accepted, and common parts of user instructions? How verification steps and personal stories are regarded by seniors is measured by counting the pluses and minuses participants place at the motivational elements, and by comparing these to the pluses and minuses placed at other parts of our test materials.

2. Do seniors appreciate the use of verification steps and personal stories in user instructions?

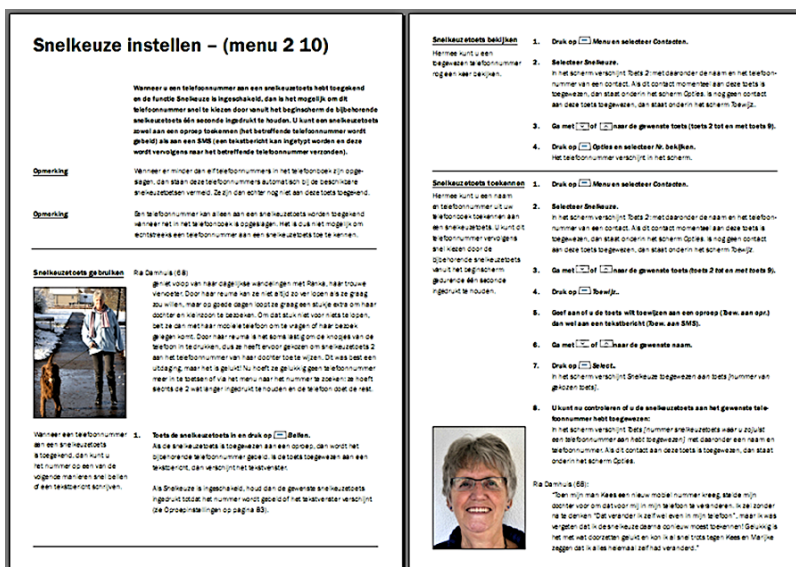
Whether verification steps and personal stories are appreciated by seniors is measured by asking our participants whether they generally encourage or discourage the use of these motivational elements in user instructions.

3. Why do seniors encourage / discourage the use of verification steps and personal stories in user instructions?

We expect seniors to link their positive answers to user confidence and motivation aspects, since these are reasons advocates of motivational elements in user instructions encourage their use (cf. Goodwin, 1991; Horton, 1997). We expect seniors to link their negative answers to redundancy, since advocates of the traditional view on designing user instructions see this as the major reason to discourage the use of motivational elements (cf. Moore, 1997).

The plus-minus method allows for testing views on and appreciation for text parts without focusing on them; a necessity for finding out whether the motivational elements in our text stand out or if they are seen as a logical part of the user instructions.

Figure 1. Example Pages (in Dutch, pages 1 and 2 of 4)



Translation verification step (right page, step 8):

You can now check if you have assigned the speed dial key to the chosen phone number: The display shows *Key [number speed dial key you have just assigned]* and a name and phone number. If this contact is assigned to this key, then the display will also show *Options*.

Translation personal story (left page, next to picture):

Ria Damhuis (68) enjoys her daily walks with her dog Ranka to the fullest. Her rheumatoid arthritis makes it hard to walk long distances, but on good days, she doesn't mind walking a bit further to visit her daughter and grandson. She'll call first to make sure they are home, but her rheumatoid arthritis makes it hard sometimes to push the buttons on her cell phone. She has assigned the phone number of her daughter to speed dial key 2, so she only has to hold down that key to call her. It was quite a challenge to assign the speed dial key, but it worked! Now, she doesn't have to push her daughter's number in anymore or look it up in her contact list: she only has to hold down key 2 and her cell phone does the rest.

Method

Materials

Our test materials were a chapter in our rewritten and redesigned Nokia 1100 user instructions in Dutch. An earlier version of these instructions was used for our previous study (Loorbach, Karreman, & Steehouder, 2007). We used the chapter on speed dialing, which comprises four pages. This chapter begins with a chapter title, a general introduction, and two remarks. The rest of the chapter contains six subchapters on speed dialing, and an equal number of step-wise procedures. Each subchapter contains a title and an introduction, and one subchapter contains a remark. Throughout the text, three personal stories are included, on pages 1, 2, and 3. Personal stories are either anecdotes or testimonials, describing how a 68-year-old woman named Ria Damhuis struggled a bit with the instructions, but always succeeded in reaching her goal. Each story is accompanied by a picture of Ria to stimulate the process of modeling.

Also, four verification steps are included: once on pages 2 and 3, and twice on page 4. In total, our test materials consist of 7 titles, 7 intros, 3 remarks, 27 steps, 4 verification steps, and 3 personal stories. See Figure 1 for the first two pages of our chapter on speed dialing (in Dutch).

Participants and Procedure

Twenty Dutch seniors (6 males and 14 females; age range 62–70, $M = 66.75$, $SD = 2.71$) participated in our study. Participants either replied to an advertisement in newsletters of several elderly associations, to a flyer that was put in their mail box, or to a request of an acquaintance who had already participated in our study. Participants received €10 for their cooperation.

The only selection criteria we used were that the participants were between 60 and 70 years of age, and that they did not have any prior knowledge on how to use a Nokia 1100, the type of cell phone described in the test materials.

After having participants fill out some questionnaires on confidence aspects as a pre-test for our next study, we used the plus-minus method to invoke seniors' responses to our test materials. De Jong and Schellens (1998) explain that the plus-minus method "involves asking participants to read a text from start to

finish and to mark their positive and negative reading experiences with pluses and minuses, respectively, in the margin. Pluses and minuses may be assigned to all sorts of text elements (from chapters to words) and for various reasons (for example, comprehensibility, appreciation, relevance of the information). After that, individual interviews are held, focusing on the reasons for every plus and minus" (p. 123). This method is primarily a qualitative method, and even though it has been used quantitatively before, it has never been used to compare the number of pluses and minuses given to relatively new parts in user instructions to the number of pluses and minuses given to well-accepted, common parts in the genre of technical communication.

As suggested by De Jong and Schellens, we asked each participant to read the four-page chapter on speed dialing, and to mark their positive and negative reading experiences with pluses and minuses. In explaining the procedure to participants, no references were made to the motivational elements in the text. When participants were finished scoring the text, a voice recorder was started (all participants signed an approval form), and participants explained each plus and minus they had marked in an interview. At the end of each interview, the interviewer pointed out the verification steps and personal stories. When participants had not placed any plus or minus next to a verification step or personal story, or when they had placed both a plus and a minus, then the interviewer asked: "If you had to place one plus or minus, what would it be?" All participants were asked: "If it were up to you, would you encourage the use of verification steps / personal stories in user instructions, or would you discourage its use? And why?" As a result, all participants marked verification steps and personal stories, and explained their reasons for doing so.

Data Analysis

All pluses and minuses were explained during the interviews. All the pluses and minuses that were marked before the interview were labeled "initial pluses and minuses." When participants' plus or minus next to a verification step or personal story was placed as a response to the element in question, then we recorded this entry as a "spontaneous" plus or minus. A spontaneous plus or minus for verification steps means that the participant either liked or disliked the idea of providing verification steps in user instructions. For

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personal stories, pluses and minuses are either related to the idea of having personal stories in user instructions, or to Mrs. Damhuis, the character displayed in all personal stories. So when participants explained that they had given a plus because a procedure was explained clearly due to the verification step, because using speed dial is very useful to Mrs. Damhuis, or because of Mrs. Damhuis' ability to use speed dial, then a spontaneous plus was indeed attributed to the verification step or personal story they had initially placed it at. But when participants explained that they had given a plus because using speed dial is very useful period, because they particularly liked the use of a certain word in a verification step, or that a minus was given because Mrs. Damhuis should have purchased a customized cell phone for people suffering from rheumatoid arthritis instead of using speed dial on the described cell phone, then the plus or minus was categorized as "other," and participants were subsequently asked to place and explain a plus or minus for the strategy *per se*; for the idea of providing verification steps or personal stories in user instructions. The resulting pluses and minuses were labeled as "forced."

Participants who had not placed any plus or minus next to a verification step or personal story, or who had placed both a plus and a minus were also asked to place and explain one plus or minus for each strategy *per se*. The resulting pluses and minuses were again labeled as "forced."

So, initial pluses and minuses are all pluses and minuses given by senior participants to text parts in the test materials. These pluses and minuses were not necessarily aimed at the motivational elements verification steps and personal stories. All final pluses and minuses were either spontaneously given or "forced" (given when asked by the researcher), and reflect seniors' views on the idea of providing verification steps and personal stories in user instructions. The final pluses and minuses are two per participant; one for each of the two strategies *per se*.

The interviews on seniors' reasons for encouraging or discouraging verification steps and personal stories in user instructions were coded by two raters. Cohen's Kappa interrater agreement coefficient was calculated for their categorization of seniors' explanations, after which disagreements were solved by reevaluating the accompanying explanation together and assigning it to the most suitable category.

Table 1. Initial Pluses and Minuses Given to Verification Steps and Regular Steps

	Verification steps	Regular steps
Initial pluses	11 (12)*	92 (91)*
Initial minuses	7 (6)*	44 (45)*

* Expected count.

Note. Number of pluses/minuses consists of one or more pluses/minuses per participant.

Results

How Do Seniors Regard Verification Steps and Personal Stories?

We set out to test whether the confidence-increasing elements verification steps and personal stories are acceptable to seniors. As a first step, we wanted to find out whether these motivational elements are regarded by seniors as a natural part of user instructions: Whether they are treated like common and well-accepted parts of user instructions. We assume that if these motivational elements stand out, then they will be given a relatively higher number of initial pluses and minuses than other parts of the instructional text. In other words, if these elements are seen as other well-known, accepted parts of the user instructions, then our participants will treat them the same way, and give them a proportionally comparable number of pluses and minuses compared to the rest of the instructional text.

In total, verification steps were given 11 initial pluses and 7 initial minuses, meaning these pluses and minuses were not necessarily given to the use of verification steps in user instructions (that is, they could have been given, for example, because a certain word in the verification step was (un)appealing to a participant). Our test materials consisted of 51 parts, and contained 4 verification steps, and 27 regular steps. Assuming verification steps do not stand out, we expected them to be given a proportionally comparable number of initial pluses and minuses compared to regular steps, which we consider comparable, accepted parts of the instructional text. Our suspicion was confirmed by a Pearson Chi-Square test ($\chi^2 = .307$, $p = .580$): Seniors' scoring of verification steps does not statistically differ

Table 2. Initial Pluses and Minuses Given to Personal Stories and Other Non-Steps

	Personal stories	Other non-steps
Initial pluses	11 (7.7)*	14 (17.3)*
Initial minuses	9 (12.3)*	31 (27.7)*

* Expected count in brackets.

Note. Number of pluses/minuses consists of one or more pluses/minuses per participant.

from their scoring of other, regular steps (see Table 1), so seniors regard verification steps as a common part of user instructions.

In total, personal stories were given 11 initial pluses and 9 initial minuses, meaning they were not necessarily given to the use of personal stories in user instructions. Our test materials consisted of 51 parts, of which 20, like personal stories, were not steps. Our instructions contained three personal stories. Assuming personal stories do not stand out, we expected them to be given a proportionally comparable number of initial pluses and minuses given to other non-steps. Even though personal stories were given more pluses than expected, and fewer minuses than expected, and other non-steps were given fewer pluses than expected and more minuses than expected assuming the two categories are comparable (see Table 2), these differences merely tended to statistically differ ($\chi^2 = 3.338$, $p = .068$). So contrary to our expectations, personal stories merely tend to stand out, compared to common, well-accepted parts of user instructions.

Do Seniors Appreciate Verification Steps and Personal Stories?

To find out whether verification steps and personal stories are appreciated by seniors, we need to look at only those pluses and minuses that were given to the strategies themselves (to the idea of providing verification steps and personal stories in user instructions). Do seniors suggest verification steps and personal stories should be incorporated in user instructions “in real life,” or do they suggest these elements should be left out?

We looked at the final pluses and minuses given to verification steps and personal stories *per se*, meaning one plus or minus per strategy per participant, reflecting

Table 3. Pluses and Minuses Given to the Idea of Providing Verification Steps and Personal Stories

	Verification steps	Personal stories
Spontaneous plus	0	5
Forced plus	19	8
Spontaneous minus	0	3
Forced minus	1	4

Note. One plus/minus per participant per strategy.

whether participants encourage or discourage its use in user instructions (see Table 3).

For verification steps, none of the initially given pluses and minuses regarded the strategy itself. This confirms our previous finding that verification steps are viewed as logical parts of user instructions by seniors. When asked, 19 out of 20 seniors encouraged the use of verification steps in user instructions. Or in Keller's (1987a) terms: To 95 percent of our senior participants, providing verification steps in user instructions is acceptable.

For personal stories, 5 out of the 11 initially given pluses, and 3 out of the 9 initially given minuses regarded the strategy itself. These were labeled “spontaneous pluses and minuses.” This confirms our previous finding that personal stories tend to stand out to seniors: In our case, personal stories stand out positively to 25 percent, and negatively to 15 percent of seniors. Looking at the final pluses and minuses given to personal stories *per se* shows that 13 out of 20 seniors encourage the use of personal stories in user instructions. Or in Keller's (1987a) terms: To 65 percent of our senior participants, a slight majority, providing personal stories in user instructions is acceptable.

Since all personal stories presented a female user, we were interested whether gender plays a statistically significant role in user perception. This was not the case.

Why Do Seniors Encourage / Discourage the Use of Verification Steps and Personal Stories in User Instructions?

Verification Steps. When asked, 19 out of 20 participants responded positively to verification steps: If seniors had to choose between encouraging or discouraging their use in user instructions, then 95 percent would encourage it. The one person who

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discouraged their use explained that people will be able to tell if the described actions were performed correctly, and therefore do not need verification steps. As predicted by Moore (1997), who opposes to the idea of providing motivation in user instructions, the use of this motivational element is discouraged because it is considered redundant.

The interviews on the reasons for seniors' final pluses and minuses reveal that, as expected, verification steps are mainly encouraged because they are expected to decrease possible doubts, and to increase user confidence and satisfaction. Following are some examples of seniors' explanation for encouraging verification steps:

Yes, yes. Getting back to my DVD recorder: That manual tells me what to do stepwise, too. But then I can't check. It's not until the end of the movie until I find out if it worked. And then you went through

all that trouble for nothing. Then you're waiting for forty-five minutes, for a movie that won't be there.

Checking when you did something, then you're convinced... Look, a secure feeling. For instance, I typed something in here... And later on, I'm trying that and thinking "God, things are well." Then that'll have helped me for a bit, so to speak.... When I can check and when something has gone right, then I'm actually a bit proud of myself. Then I did it again after all, right?

I think that's a good thing, putting a verification step there. Especially for us. [Researcher: "Especially for us?"] Yes, the older generation is much more used to checking things again. "This is what I have, this is what it looks like. I've got it." Yes, I think it's a good thing. [Researcher: "Okay, so you think..."] Yes, yes, yes. That's also a drawback of a calculator without a print-out to check, then you can't check what you're doing, so a mistake is invisible. It's the same with this. I'm for checking what you've done. So that belongs there, I think. It also gives you a piece of security.

Table 4 shows a categorization of seniors' main reasons for encouraging verification steps in user instructions (Cohen's kappa interrater agreement coefficient = .81).

Personal Stories. Thirteen out of 20 participants responded positively to personal stories: If seniors had to choose between encouraging or discouraging their use in user instructions, then 65 percent would encourage it. The interviews on the reasons for seniors' final pluses and minuses reveal that, as expected, personal stories are mainly encouraged for their expected positive effects on user confidence and motivation. Following are some examples of seniors' explanation for encouraging personal stories in user instructions:

[Personal stories] make it easy for us. Because we read this story about this lady who walks her dog and she wants to go visit, right? ["Yes"] And then I'm thinking "Well, that lady actually has the same problem we do." Right? Because it says here "with effort, she managed to finish up," and she was proud of that, too, towards the children, so to say. ... When there's a short story, it gives me a secure feeling.

Table 4. Seniors' Main Reasons for Encouraging the Use of Verification Steps in User Instructions

	Encouraging verification steps
Confidence No doubts / Secure feeling of having succeeded	13
Effectiveness¹ Procedure will be carried out correctly	1
No negative effects expected Including them can't hurt	1
Currently missing² Missing in existing manuals	1
Clarity It is clear	1
General reason It's a good thing	2
Total	19

Note. Three seniors mentioned that the use of verification steps in user instructions should especially be encouraged for the elderly.

¹ Mentioned by one senior as a secondary reason for encouraging verification steps.

² Mentioned by two seniors as a secondary reason for encouraging verification steps.

I'm a bit in the middle there, because on one hand, it leads you to "Hey, oh, that's a situation I find myself in, too, sometimes". That's useful and then you think "Well, if she thinks that's very... then I should have a look after all." Right? So I actually think, yes, an instruction manual, when I think of that, I don't think of stories about people, but on the other hand, I do think it's clarifying, especially for some people who aren't just focused on technical things.

That speed dial key, that's a plus, that it's so easy for her to reach her daughter, I really thought that's a plus. ... This story is also positive. Yes. That she thinks "I'll do that, no problem," and when she actually started doing it, she thought "Oops, how should I do that?" And she managed after all, I think that's very positive. Right? I'd try it, too. I'd really try it and think "Well, I'm going for it. I'm just going to try and if I get stuck, well, I'll call André. ["He's your personal helpdesk?"] Yes, my personal helpdesk. [But you would encourage stories like this?"] Yes. I would, yes. I would, because it tells you that many people are dealing with this. Right? And that many people are sometimes struggling with this. And I just think that's great. Yes, really. ... And to me, this story is truly amazing, that he's keeping scores of the weather and that she sends him text messages. I think that's truly amazing, when you're able to do that, respect. Really. I can't, I can't send text messages.

Table 5 shows a categorization of seniors' main reasons for encouraging personal stories in user instructions (Cohen's kappa interrater agreement coefficient = .81).

As expected, and comparable to seniors' reactions to verification steps, the use of personal stories is mainly discouraged for redundancy reasons. Following are some examples of seniors' explanation for discouraging personal stories in user instructions:

That isn't really part of it, or is it? That lady. Is it? ["Yes, that lady is part of the text"] ... I don't think it adds anything. ... Someone else might... But I don't really need it. No.

Why this is here, this entire story about this woman, I'm not a fan of that. I just want to know what to

Table 5. Seniors' Main Reasons for Encouraging the Use of Personal Stories in User Instructions

	Encouraging personal stories
Vicarious pride Mrs. Damhuis is doing well	3
Modeling¹ Mrs. Damhuis encounters the same problems we do—resulting in a secure feeling (confidence) and wanting to try it, too (motivation)	2
Relevance Stories explain usefulness in everyday life	2
Clarity Written clearly (also: Mrs. Damhuis explains it clearly)	3
Visualization Stories visualize and speak out	1
Appeal Stories are appealing	1
General reason They are okay	1
Total	13

Note. Two seniors mentioned that the use of personal stories in user instructions should especially be encouraged for the elderly.

¹ Mentioned by one senior as a secondary reason for encouraging personal stories.

do. ... I put a minus, because I think it doesn't make sense. Why should I know what that woman is doing? No, I don't think it's necessary at all. It really doesn't have to be there. Just tell me like it is, dryly, well, clearly. And then that woman doesn't have to be there, because I'm not interested in knowing what she's doing with that thing.

I don't think I'll like [reading these stories in a manual]. You know what it is? Then you'll have a piece of text here and people won't read it anyway. I personally wouldn't include them. Right? It's an instruction manual and you'll want to... as fast and well as possible... and to have an extra piece of text there. ... No, I think... It's a little more friendly

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towards people, but still... It allows you to imagine, but still. I'm thinking "Does that belong in an instruction manual?". To me, it doesn't. No.

It's not necessary to put this in [an instruction manual]. There's no explanation here besides what she can do. But what she's done and how she did it is not explained. It's just a reaction. ... No, I don't need it. ... This story here, it doesn't need to be in here. No. It's a whole lot, what she did. And what she did and that she succeeded, that's very nice, right? But it doesn't have to be in here. It doesn't have added value. I do want to know she succeeded, but other than that...

Table 6 shows a categorization of seniors' main reasons for discouraging personal stories in user instructions (full agreement between the two raters; Cohen's kappa = 1).

Table 6. Seniors' Main Reasons for Discouraging the Use of Personal Stories in User Instructions

	Discouraging personal stories
Redundancy Personal stories have no added value / are not necessary / do not belong in user instructions	6
Disagreement with behavior story character Mrs. Damhuis should have called instead	1
Total	7

Note. Two seniors mentioned "Not interested in knowing what Mrs. Damhuis is doing" as a secondary reason for discouraging personal stories in user instructions, and another senior mentioned "Personal stories will not be read" as a secondary reason for discouraging personal stories in user instructions.

Conclusion and Discussion

Value of the Plus-Minus Method

The plus-minus method proved to be a valuable method for checking if verification steps and personal stories are evaluated in a comparable manner to other, well-accepted parts of the instructional test materials. Another advantage of the plus-minus method is that it enabled us to find out how seniors score certain parts of the text—in our case, by looking at the pluses and minuses given to motivational elements—without putting a focus on those elements. In our view, this method is less prone to socially desirable answers, and therefore gives a more natural look at seniors' true views on the use of verification steps and personal stories in user instructions than by asking them directly or by letting them fill out a questionnaire.

Seniors' Reactions to Verification Steps

Our study showed that seniors regard verification steps as a natural part of user instructions: In the process of scoring instructional parts, verification steps were treated like other steps which are assumed a common, well-accepted part of user instructions. Besides being scored like other, well-accepted steps in user instructions, none of the responses to verification steps *per se* were spontaneously given. This means that all initially given pluses and minuses regarded other things than the strategy (for example, words used, presented order in the chapter, etc.). The fact that no spontaneous minuses were given to verification steps *per se* indicates that providing this motivational element in user instructions will probably not offend or annoy senior users.

The finding that verification steps do not particularly stand out in user instructions was expected, since they belong to "actions and reactions," which according to Van der Meij and Gellevij (2004), are one of the four components of a procedure. Verification steps can also be seen as an elaborated kind of feedback statements in steps, which in turn are considered an occasionally used, but common part of user instructions (see Farkas, 1999, describing streamlined-step procedures, "a model that dominates online help systems and is very widely used elsewhere" (p. 42)). Where feedback statements in steps are "brief descriptions of the system's response to the user's action and the new state the system has entered"

(p. 49), verification steps literally go one step further and provide feedback on the entire procedure. The purpose of both kinds of steps seems the same: “The most basic role of feedback is to provide verification (make clear that the user did the right thing and the system has responded properly) and to draw the user’s attention to the result of the action” (Farkas, 1999, p. 49). As we do with verification steps, Farkas believes feedback statements will positively influence user confidence: “Even though writers may not use feedback statements often, their deft use helps guide the user smoothly and confidently through the procedure” (p. 49). So verification steps are considered an accepted part of user instructions to our audience of seniors. They’re expected to increase user confidence and they may have a positive effect on usability.

Aside from seeming well-accepted to senior users, verification steps also seem to be appreciated by our audience: 19 out of 20 seniors encouraged providing them in user instructions. The one person who discouraged its use did so for redundancy reasons. Still, 95 percent of our participant group encouraged providing verification steps in user instructions, and we therefore consider verification steps an appreciated motivational element by our senior audience.

Our study showed that out of the 19 participants who encouraged the use of verification steps in user instructions, 13 did so because these are expected to decrease possible doubts, and increase user confidence and satisfaction. This is in line with our predictions, and with the reasons motivational elements in user instructions are encouraged by researchers in the field of technical communication, like Goodwin (1991) and Horton (1997). It is also in line with Bandura’s first source of self-efficacy beliefs, since decreasing possible doubts will stimulate experiencing success, and as such enactive mastery experience. One participant specifically named effectiveness of task performance—another stimulant of enactive mastery experience—when explaining why the use of verification steps in user instructions should be encouraged. So when looking at seniors’ reasons to encourage the use of verification steps in user instructions through Bandura’s eyes, so to speak, then 14 out of 19 participants (74%) did so because they expected them to positively affect enactive mastery experiences with success, which in turn will stimulate self-efficacy beliefs. We suggest providing verification steps in user instructions.

Seniors’ Reactions to Personal Stories

As far as personal stories are concerned as a motivational element in user instructions, we found out that they are less common in user instructions than verification steps: To our group of senior users, personal stories tend to stand out in user instructions. This was to be expected, since personal stories are not commonly used in user instructions (yet). Like with verification steps, we also looked at the number of spontaneously given pluses and minuses to providing personal stories as a strategy *per se*. Forty percent of pluses and minuses given to the strategy *per se* were spontaneously given, leading us to conclude that personal stories stand out more to seniors than verification steps do, which were not given any spontaneous pluses or minuses for the strategy *per se*. This is not surprising, since each story is accompanied by a picture, and opposed to verification steps which are a different kind but still another step that seniors are used to seeing in user instructions, anecdotes and testimonial are not commonly used in the field of technical communication. We expect personal stories to be regarded more like common parts of user instructions once they are being provided more often in this genre.

Even though seniors do not regard personal stories as a common, well-accepted part of user instructions yet, they do tend to appreciate the use of personal stories in user instructions: Thirteen out of our 20 senior participants, a slight majority, encourage providing personal stories in user instructions. Out of the 13 participants encouraging the use of personal stories, 5 did so for reasons in line with the rhetorical view on designing technical documents (cf. Goodwin (1991) and Horton (1997)), and in line with Bandura’s second source of self-efficacy beliefs called “vicarious experiences,” namely because personal stories are expected to install vicarious pride and as such, to increase user confidence and motivation, and because they are expected to stimulate modeling. So when looking at seniors’ reasons for encouraging the use of personal stories in user instructions through Bandura’s eyes, so to speak, then 5 out of 13 participants (38%) did so because they expected them to positively affect vicarious experiences with success, which in turn will stimulate self-efficacy beliefs.

Two out of the 13 seniors who encouraged the use of personal stories in user instructions did so for the sake of relevance. Even though we did not aim at increasing

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relevance, like we did when we designed the personal stories in our previous study (Loorbach, Karreman, & Steehouder, 2007), it is understandable that to our participants, relevance is a reason to encourage personal stories in user instructions. The nature of personal stories makes it impossible to solely focus on confidence, but that is welcomed rather than unwanted. Visser (1998) acknowledges that “the four dimensions of the ARCS Model are more to be seen as a four-dimensional look at motivation and thus cannot be strictly separated; often indeed the categories go smoothly over from one dimension into the other” (p. 145). In the process of narrowing down the number of strategies to design motivational elements in user instructions, we did not necessarily seek out strategies that strictly influence user confidence in using the instructions: We were looking for strategies that work well when it comes to increasing user confidence. From that perspective, automatically focusing on relevance as well is a welcome addition as opposed to a nuisance. Furthermore, our validation study of Keller's (2010) Instructional Motivational Materials Survey (IMMS) (Loorbach, Peters, Karreman, & Steehouder, submitted) showed a significant direct effect of the relevance construct on the confidence construct, suggesting that increasing relevance will indirectly increase user confidence as well. As such, affecting relevance aside from user confidence is a welcome side-effect of providing personal stories in user instructions.

Out of the seven seniors explaining why they discourage the use of personal stories in user instructions, three also mentioned advantages of personal stories: “It allows you to imagine”, “What [Mrs. Damhuis] did and that she succeeded, that's very nice, right? ... I do want to know [Mrs. Damhuis] succeeded”, and “It's very positive for [Mrs. Damhuis].” So three out of the seven seniors discouraging the use of personal stories do see and mention its benefits. This makes us believe that even when seniors do not want to read personal stories themselves, such stories, like expected of verification steps, will probably not offend or annoy senior users when they encounter them in user instructions, especially when skipping such stories is made relatively easy by offering them separately from the actual procedural instructions.

Six out of the seven seniors discouraging the use of personal stories in user instructions did so for redundancy reasons. In Horton's (1997) words, these

participants prefer “friendly documents” instead of “seductive documents.” But the participants in our study were asked to judge whether they encourage or discourage the use of motivational elements based on merely reading an instruction manual chapter, without having worked with the cell phone in question. Participants might have based their judgment on the assumption that the instructions will be clear and easy to follow, and everything will go according to plan; that their persistence will not be tested, and their confidence will not be dented. In other words, participants might have based their judgment on the assumption that motivational elements will not be needed. Diehl (2004) states that people evaluate a text differently when they merely read (cf. the described study in this paper) versus when they both read and do (cf. our planned study to test for effects of verification steps and personal stories on usability, user confidence and motivation). Our first study (Loorbach, Steehouder, & Taal, 2006) showed a similar trend: “After simply scanning the instructions and looking at the product, participants overestimated their [self-efficacy] responses, but after actually working with the text and the product to perform tasks, participants could gauge their responses more realistically. ... Our study confirms that such judgments [based on merely reading the text] may not reflect the true comprehensibility or usability of these [instructional] documents” (p. 194). So even when seniors regard the use of personal stories as unnecessary or redundant, such stories might prove beneficial concerning confidence and motivation, and usability of the instructions, once they start working with the instructions and cell phone in question. We suggest providing personal stories in user instructions, bearing in mind that they are presented distinctively from the procedural instructions to allow for easy skipping.

Future Research

This study showed that the use of verification steps and personal stories in user instructions seems acceptable to seniors (cf. Keller's (1987a) guideline (d)), provided that the design of the user instructions allows senior users to fairly easily skip the added motivational elements. Assuming that seniors will skip motivational elements when they realize they do not want to read them, and assuming the provided motivational elements are sufficiently delineated from other, essential parts of the instructions to allow for such easy skipping, we feel that

verification steps and personal stories will probably not offend or annoy senior users when they encounter them in user instructions. We also predict that chances are slim these motivational elements will produce negative effects on usability and motivation aspects. Knowing this, it seems worth it to let seniors read and work with user instructions containing either verification steps or personal stories, and to test for effects of these types of motivational elements on usability, user confidence and motivation.

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Eight Guidelines for the Design of Instructional Videos for Software Training

Hans van der Meij and Jan van der Meij

Abstract

Purpose: Video has become a popular means for delivering “how to” information about a wide variety of software tasks. With video rapidly becoming a major instructional method, the question arises of their effectiveness for software training. This paper provides a set of eight guidelines for the construction of instructional videos for software training.

Method: The guidelines present a concise view on how to design an instructional video for software training. They are based on a considerable body of research on how people process visual and verbal information and how to support these processes. Each guideline is described, illustrated, and supported with research findings from various disciplines.

Results: The guidelines were tested in three consecutive empirical studies. In these studies a set of instructional videos for Word’s formatting options were designed. The effects of the video instructions were compared with a paper tutorial (Van der Meij & Van der Meij, in preparation). We found that the video instructions yielded more favorable appraisals for motivation, higher skills proficiency immediately after training, and better skills retention after a one-week delay.

Conclusions: The guidelines offer patterns that could further advance the theory and practice of the design of instructional videos for software training. A limitation of the study is that we concentrated on instructional video that serve a tutorial function. For video that function as a reference guide not all the guidelines are equally important, and also some new guidelines may be called for.

Keywords: video instruction, software tutorials, procedural support, streamlined step

Practitioner’s Takeaway

- Our eight guidelines support practitioners in producing task-pertinent video tutorials for software training.
- Our eight guidelines have been tested and proven effective under controlled, experimental conditions
- The descriptions that accompany the eight guidelines for the design of video instructions provide practitioners with background information that they can use to construct their own videos, or select the most apt ones from those that are available.
- Our design examples can inspire practitioners to reconsider some of their design considerations for the construction of their own video tutorials.

Guidelines for Instructional Videos

Introduction

Video has become a popular means for delivering “how to” information about a wide variety of software tasks. The rise of instructional videos has been stimulated by several factors. On the demand side, there is the exponential growth of new or updated software programs for which users request support. On the supply side, the rapid advances in easy-to-use technology have played an important role. Software programs such as Camtasia, Screencast-O-Matic, Captivate, Flash, and QuickTime have greatly facilitated the production and editing of instructional videos. The ability to publish and upload these videos rapidly and easily has given the final push, as the Internet offers a premier distribution channel for reaching millions of clients at the click of a mouse button.

The effects of these developments are visible on Web sites from companies such as Adobe, Apple, HP, Microsoft, IBM, and others that offer dozens upon dozens of instructional videos for their clients. Users have also been affected by these changes. From being solely consumers, they have now taken on the role of designer as well. Almost overnight, users have begun producing and editing thousands of “how to” videos that are published on Web sites such as Instructables, WikiHow, eHow, Howcast, Videojug, Vimeo, and YouTube. In short, with video rapidly becoming a major method for instructing the software user, the question arises of how effective these videos are for software training.

The growing popularity of video for software instructions is also visible in the rise of publications on this topic. The recent study of Swarts (2012) is illustrative for the current state-of-the-art as it set out to uncover a set of “best practices” for instructional video for software training. The relative lack of research on instructional video for software training also transpires in experimental research. Experiments on instructional video for procedural knowledge development are rare (see Höffler & Leutner, 2007). Only two recent studies compared a paper-based tutorial with a video tutorial (Alexander, 2013; Lloyd & Robertson, 2012). Unfortunately, both studies provide little detail on the specifics of the videos that were designed and tested, and yielded equivocal outcomes. That is, whereas Alexander (2013) could detect no advantage for a video over a paper-based tutorial, Lloyd and Robertson (2012) found that video instructions were more beneficial for software learning.

The present article contributes to the research on instructional video for software training by advancing a set of eight guidelines for their construction. By defining, grounding, and illustrating these guidelines, the reader is presented with design patterns. Such patterns are middle-level theories that offer standard solution schemata for recurring problems. They “capture regularities of practices in ways that are potentially intelligible, verifiable, and perhaps useful to the practitioners themselves” (Carroll & Farooq, 2007, p. 41). Design patterns can be useful for both theory and practice. They advance understanding of how designs can be effective and they frame and propose concrete design solutions that illustrate the underlying guidelines.

Eight Guidelines for Instructional Video for Software Training

There is a considerable body of research on multimedia learning that provides important insights into how people process visual and verbal information (e.g., Mayer, 2001, 2005a). This research forms a solid foundation for understanding how video can enhance learning. The multimedia literature provides further valuable guidelines for the construction of multimedia instruction. These guidelines are very general, however, leaving designers with (too) little concrete advice about the best solution for their specific design problem.

It matters considerably whether multimedia instruction aims to teach users how to solve a mathematical problem, or whether it aims to help users accomplish software tasks. For example, for mathematical problem-solving, the multimedia instruction should focus on enhancing the user’s conceptual knowledge. A good design solution could be a simulation that displays the solution steps visually, in combination with a voice-over that informs the user about the types of problem involved and the rationale behind each step. In contrast, software training should revolve around enhancing the user’s procedural knowledge. A good design solution could be a recorded demonstration that shows the user how to accomplish the software task, in combination with a voice-over that directs the user’s attention to the software elements (for example, locations, icons, menus) and important facets of the human-computer interaction (that is, user input and system reaction).

In other words, while the underlying cognitive processing is the same and is relevant for all types of multimedia learning designs, it is vital to have dedicated design guidelines for instructional videos for software training. This paper proposes such a set of guidelines. We present eight guidelines that we consider to be fundamental for the design of video instructions that teach people how to accomplish software tasks (see Figure 1). The guidelines focus on the design of video

Figure 1. Eight Guidelines for the Design of Instructional Videos for Software Training

Guideline 1: Provide easy access
Guideline 1.1: Craft the title carefully
Guideline 2: Use animation with narration
Guideline 2.1: Be faithful to the actual interface in the animation
Guideline 2.2: Use a spoken human voice for the narration
Guideline 2.3: Action and voice must be in synch
Guideline 3: Enable functional interactivity
Guideline 3.1: Pace the video carefully
Guideline 3.2: Enable user control
Guideline 4: Preview the task
Guideline 4.1: Promote the goal
Guideline 4.2: Use a conversational style to enhance perceptions of task relevance
Guideline 4.3: Introduce new concepts by showing their use in context
Guideline 5: Provide procedural rather than conceptual information
Guideline 6: Make tasks clear and simple
Guideline 6.1: Follow the user's mental plan in describing an action sequence
Guideline 6.2: Draw attention to the interconnection of user actions and system reactions
Guideline 6.3: Use highlighting to guide attention
Guideline 7: Keep videos short
Guideline 8: Strengthen demonstration with practice

tutorials; they concentrate on (sets of) instructions that support learning and retention of software skills.

Although the guidelines are sequenced so that they more or less follow the flow of a scenario of use, each stands on its own as a design principle. This independence is evident from experimental research on several of the guidelines, in which only one specific guideline was manipulated.

The guidelines are based on numerous sources, most notable among them: Bethke, Dean, Kaiser, Ort, and Pessin on usability (1981); Mayer on multimedia learning and multimedia principles (2001, 2003b, 2005b, 2005c, 2005d); Van der Meij and Carroll on minimalism (1998); Van der Meij and Gellevij on the Four Components Model (2004); Tversky, Bauer-Morrison, and Betrancourt on animation (2002); and Plaisant and Shneiderman on guidelines for recorded demonstrations (2005).

In other words, much of the source materials for the guidelines comes from two closely related fields, namely educational psychology and instructional design. Perhaps more so than advancing new theory, or practice behind the process of the design of instructional video, the guidelines summarize key notions of accepted thinking. They generally do not offer entirely novel insights about the design of instructional video, but rather present a unique and helpful way of structuring and summarizing the pertinent research. Framed differently, one could say that the guidelines highlight the general assumptions behind "best practices".

Throughout the paper we will speak of a *video tutorial*, or *tutorial*, to refer to a set of videos that together form an instructional package. The term video is reserved for a rounded-off instruction on a software issue. Usually this means that the video presents a starting state or problem, a solution path and an end state. We speak of a segment to refer to a section, fragment or screenshot from a video. The discussion of each guideline is subdivided into three sections: description, support, and design examples.

The description section introduces each guideline. There is a brief characterization along with a discussion of specific design features.

The support section presents the theoretical and/or empirical support for the guideline. Information from our core perspectives (that is, usability, multimedia principles, minimalism, Four Components Model, animations, and recorded demonstrations) is repeatedly

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presented here. In addition, we briefly summarize pertinent studies on demonstrations for procedural skills development. This section aims to do more than just provide support for the guideline. It also offers background information and insights that should assist the reader in making an informed decision about whether or not the guideline should be applied in his or her situation.

The design examples section consists of cases that illustrate strong or weak design solutions. These examples stem from two sources. Restricting the examples to these two sources enables us to engage in more in-depth discussion, and to show relationships between guidelines. One set of examples revolves around Camtasia Studio (version 7), a screen recording program developed by TechSmith, whose company Web site offers a large set of video instructions. Here we concentrate on the “Getting Started” series, which is a tutorial for first-time users of Camtasia Studio (“Camtasia Studio 7 tutorials,” 2013). The other set of examples revolves around a tutorial on Word’s formatting options. We have created this video tutorial ourselves, following the eight guidelines for their design. The effectiveness of this tutorial has been tested against a paper tutorial that dealt with the same topics in three consecutive experiments. We found that the video instructions yielded more favorable appraisals for motivation, higher skills proficiency immediately after training, and better skills retention after a one-week delay (Van der Meij & Van der Meij, in preparation, in review). We provide references to the guidelines (for example, G1.1) in pertinent places, to assist the reader seeking specific information.

Guideline 1: Provide Easy Access

Guideline 1.1: Craft the Title Carefully

Description. Producing and publishing video instructions for a wider audience is one thing. Making them easy to find is quite another matter (G1). A user who is trying to locate video instructions for a specific software feature usually confronts two hurdles in finding that product. First, the user must find the most probable source or location for the video. This can be the software manufacturer, but it can also be a second party such as YouTube or eHow. Second, the user must

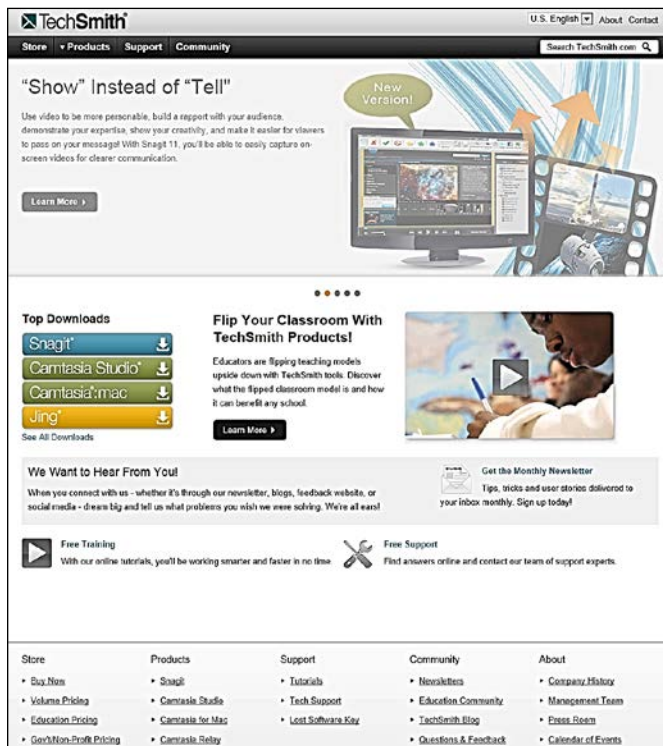
select the proper candidate from among the available videos. The title of the video plays a critical role in this decision-making process. Just like a title in a paper tutorial or manual, it should be crafted with care (G1.1). It is preferable to have the title contain a verb and an object, telling the user what task the video demonstrates how to perform. The use of jargon should be avoided for introductory materials. Likewise, sites may offer the ability to show a brief abstract or summary of the video that could enhance its accessibility.

Support. In their classic paper on usability, Bethke *et al.* (1981) indicate that the first criterion for user documentation to satisfy is that the information it provides should be easy to find (G1). To achieve such accessibility, they advise designers to carefully consider these factors: arrangement, pointers, and consistency. Arrangement refers to the structural organization of the information. This structure should be aligned with the user’s perspective. Common methods for ordering content are: chronological, alphabetical, and topical. Pointers are indicators of content and presentation that assist the user in identifying and locating information. Pointers such as a table of contents, an index, or a keyword search facility assist the user in getting past the first hurdle of gaining access to a set of potentially useful sources. A title or a heading plays an important role in finding the right product within that set. Consistency means always presenting the same information type at the same place and in the same manner. Consistency helps the user build a schema of how things are presented. Once the user has developed this schema, navigation and reading are greatly facilitated.

The guideline to craft the title carefully (G1.1) signals the title’s important role in the user’s search for the right product. All or some of the title words probably appear in the table of contents and in the index, and will yield a hit with a keyword search. In addition, just as in a paper tutorial or online help system, the title should give the user a succinct description of the goal that is demonstrated (see Farkas, 1999; Van der Meij & Gellevis, 2004).

Design Examples. TechSmith’s Web site provides great accessibility to their instructional videos, as it exemplifies their presence (G1). The home page offers at least four ways to access their tutorials and videos (see Figure 2).

One, clicking the Support-button at the top reveals a new Web site with three types of information:

Figure 2. Home Page of TechSmith (source: www.techsmith.com)

Tutorials, Technical support and Help in retrieving a lost software key. Two, typing the word 'video' in the open Search field yields a list of in-company support products. In that list, action verbs such as capturing, recording, and editing, in combination with object names such as video, screencast, and screenshot, are handy pointers for the type of help the user can expect to find. Three, clicking on the Start icon or the Free training link brings the user to a Web site that lists all available video tutorials. Four, the Support option at the bottom of the page links to the same three options as at the top, but users can also link forward immediately to Tutorials.

Figure 3 displays the table of contents for the "Getting Started" series for Camtasia Studio 7. The organization of the eight videos included in this tutorial is chronological, with a sequence that follows the basic scenario of recording, editing, and sharing a video, by and large. All of the verbs in the titles could perhaps be better presented as gerunds (that is, Recording, Adding, Cutting, and Sharing), as this is the top choice for titles as recommended by Farkas (1999). Consistency would also increase, which would facilitate scanning.

Not all of their titles adhere to the guideline to craft these carefully (G1.1, see Figure 3). The title

Figure 3. Table of Contents of the "Getting Started" Series for Camtasia Studio 7

Title	Category	Level	Format
Getting Started 1 - Record Full Screen	Getting Started	I	Video
Getting Started 2 - Editing Dimensions and Save Project	Getting Started	I	Video
Getting Started 3 - Overview of Camtasia Studio Interface	Getting Started	I	Video
Getting Started 4 - Apply SmartFocus to Zoom and Pan	Getting Started	I	Video
Getting Started 5 - Cut Unwanted Video and Audio on the Timeline	Getting Started	I	Video
Getting Started 6 - Add a Title Clip	Getting Started	I	Video
Getting Started 7 - Add a Transition	Getting Started	I	Video
Getting Started 8 - Share Your Video on Screencast.com	Getting Started	I	Video

for the video "Record Full Screen" is not entirely satisfactory because it does not fully cover its content. In addition to demonstrating how to record what happens on a full screen, the video also shows and explains how to record what the user says into the microphone. The title should therefore signal both of these goals. In some titles the use of jargon is also problematic. For the target audience for these videos, the terms 'dimensions' and 'pan' are probably unclear. Given that titles are sometimes short on coverage or ambiguous, designers might want to consider adding a glossary-like description that appears when the mouse lingers on the title for about three seconds.

Figure 4 illustrates how we facilitated access to the instructional videos in our tutorial on Word's formatting options (G1). We opted to present both the table of contents and the video on the same Web site. In the training situation on which our research focuses, users are likely to benefit from easy access to the videos at all times. During initial training, but certainly also during practice, they should be able to locate the videos quickly and without undue effort. To facilitate such switches, the table of contents was permanently visible and videos could be called up at any time.

Figure 4. Provisions for Accessibility of Videos in Our Tutorial on Word's Formatting Options

Note: The left column with the table of contents is permanently visible on the screen. It serves as the entry to the videos displayed on the right.

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We also numbered the videos to indicate the structural relationship of the content to a main theme. So similar content is grouped together. There are previews and procedural demonstrations. Previews are demarcated with an icon.

Guideline 2: Use Animation with Narration

Guideline 2.1: Be Faithful to the Actual Interface in the Animation

Guideline 2.2: Use a Spoken Human Voice for the Narration

Guideline 2.3: Action and Voice Must Be in Synch

Description. The prevalent format for instructional videos in software training is the recorded demonstration, which can be defined as a screen capture animation with narration (G2). The animation should reveal a scenario of use. It should display the sequence of events that take place as the user executes one action step after another during task completion. It is important to present in the animation the actual interface that the user is likely to see (G2.1). Showing the intact interface gives the user the same image that he or she is likely to be facing when trying to execute the task. In most cases this means a display of the whole screen. The demonstration then shows task execution in context, supporting the user in developing insights about the structural layout of the interface. Zooming is recommended when readability is at stake, such as where seeing a specific mouse click is important, or when text is entered as an example.

The narration should tell the users the story behind what happens on the screen, and perhaps add a bit of background. The story should be functional for what the user must see or do, rather than promoting the software. This goal is best served by a story that is in-synch with the demonstration of the actions (G2.3). Furthermore, the story should be presented in spoken rather than written form and the voice should be that of a real person rather than computer-generated (G2.2).

Support. The guideline to use animation with narration (G2) agrees with a key tenet from dual coding theory and multimedia learning theory. The insights from these theories are reflected in the *multimedia*

principle, which holds that people learn better from a carefully coordinated combination of words and pictures than from words alone. This important instructional design principle has been empirically validated in numerous studies (Mayer, 2005a). Further support for this guideline comes from the recent study by Swarts (2012) who found that users appreciate more highly video instructions that couple a demonstration with an explanation or elaboration.

The guideline to use a representation from the actual interface in the animation (G2.1) is fully in accordance with the *congruence principle* advanced by Tversky, Bauer-Morrison, and Betrancourt (2002). This principle holds that the content and format of a graphic should correspond to the desired content and format of the users' internal representation. Graphics are better understood and remembered when there is a natural cognitive correspondence between the real thing and the graphical representation. The recent meta-analysis of research on instructional animations from Höffler and Leutner (2007) also supports this guideline (G2.1) with their finding that the most realistic animation yielded the highest learning outcome.

The guideline of presenting the actual interface (G2.1) has also been investigated for paper tutorials. Van der Meij and Gellevij (1998) have advanced a taxonomy of screen captures for guiding the systematic inclusion of screen captures in manuals. Their taxonomy generally argues in favor of presenting a series of full rather than partial screen captures, because it animates the interface changes during task execution. The specific claim that such an animation helps users build a mental model was later validated in an empirical study which compared a manual with full screen pictures with one with partial screen shots (Van der Meij, 2000). The taxonomy argues for the presence of partial screens only in special circumstances or for achieving specific functions. Empirical support has been found for the claim that partial screen displays are called for when objects are hard to locate or identify on a full screen, and when users must verify screen states where legibility is a key issue (Gellevij & Van der Meij, 2004).

Another noteworthy instantiation of the guideline to be faithful to the actual interface (G2.1) is found in "training wheels" technology. This technology reduces task complexity for users by making software options unavailable. An important feature of training wheels technology is that users always see the Gestalt of the




whole interface. The users still see all menu options, but with some options grayed out and blocked from use. Among its other benefits, training wheels technology prevents users from making serious errors that are hard to recover. It has been effectively employed in several empirical studies on software training (Bannert, 2000; Carroll & Carrithers, 1984; Leutner, 2000).

The guideline to couple narration with a *spoken* voice (G2.2) connects with a well-established principle derived from multimedia learning theory, namely the *modality principle* (Mayer, 2001; 2003). This principle holds that learning is enhanced when words are presented as narration rather than as on-screen text. In paper tutorials the words and pictures must both be processed by the same visual channel. Such single channel processing can be taxing for all non-disabled users on which this discussion focuses. In multimedia presentations it is possible to call upon the resources of both the user's auditory and visual working memory rather than just one. The capacity demands on the users' visual channel are reduced by presenting verbal information through the audio channel (Moreno & Mayer, 1999). Based on the same argumentation, designers are also advised not to present verbal information through both channels at the same time. According to the *redundancy principle* (Mayer, 2001) one should avoid duplication, which would happen when a written text presents the same information as a narration.

The guideline to use a human voice (G2.2) agrees with Mayer's (2005) *voice principle*, which holds that learning is enhanced with a standard-accented human voice rather than a machine-like, or foreign-accented voice. Studies on animated pedagogical agents likewise indicate that users prefer a human voice over a computer-generated one, thanks to its greater naturalness and attractiveness (Baylor, 2011).

The guideline to synchronize the words and pictures (G2.3) aligns with the *temporal contiguity principle* (Mayer, 2001). This principle holds that when narration and animation must be integrated, a simultaneous presentation works better than a successive one. The reason is that in a successive presentation the user must hold one representation in memory and keep that active until the other representation appears. For many users this is taxing. Synchronization prevents this problem. Morain and Swarts (2012) who examined the design characteristics of high and low rated tutorial

Figure 5. Introduction to the First Video in "Getting Started" with Camtasia Studio 7

1. Record Full Screen <i>Timing:</i> 0.00 – 0.03 (3 seconds)	
2. Record Full Screen, cont'd <i>Narration:</i> This is the first of an eight part video series that walks you through the basics of recording, editing and producing your first Camtasia studio video. <i>Timing:</i> 0.04 – 0.11 (8 seconds)	
3. Record Full Screen, cont'd <i>Narration:</i> This tutorial will show you how to capture a full screen recording with audio narration. <i>Timing:</i> 0.12 – 0.17 (6 seconds)	

videos also mention synchronization as a distinguishing characteristic. That is, they found that highly rated videos synchronized the audio and video tracks "so that steps were audibly announced just before being carried out," rather than late or never (p. 10).

Design Examples. Figure 5 shows the opening segments of the first video from the tutorial on Getting Started with Camtasia Studio (that is, Record Full Screen). In accordance with Guideline 2.2, a human (male) voice is used for the narration. The speaker is speaking in his native language. The story is told clearly and with enthusiasm.

The narration is repeated in writing (in contrast to G2.2). Having the text show up on the screen may have been done to attract attention and to enhance recall. However, this is not a good design choice according to multimedia theory. Although there is no (other) visual image that demands the user's attention, the redundancy may still adversely affect the user.

Figure 6 illustrates an example of the guideline to be faithful to the actual interface (G2.1). Except for its placement, the tool is shown exactly as it appears on the screen. The video from which this segment is

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drawn discusses the three main objects from TechSmith's recorder tool. Foregrounding is functional because it makes the recorder the central point of attention. In addition, it helps the viewer perceive meaningful details in the icons such as the dotted lines in the Full Screen option, and the green checkmark for audio on.

Figure 7 shows a sequence of three segments from the discussion of the Recorder. The segments illustrate

Figure 6. First Display of the Recorder for Camtasia Studio 7





<p>The Recorder</p> <p><i>Narrator:</i> Camtasia studio minimizes and the Recorder opens.</p> <p><i>Timing:</i> 0.25 – 0.31 (7 seconds)</p>	
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Figure 7. Three consecutive Fragments Presenting the Screen Recording Options on the Recorder for Camtasia Studio 7

<p>1. The Recorder - Select Full Screen</p> <p><i>Narrator:</i> By default, the full screen is selected to be recorded</p> <p><i>Timing:</i> 0.32 – 0.34 (3 seconds)</p>	
<p>2. The Recorder - Select Full Screen, cont'd</p> <p><i>Signaling:</i> Zoom out and Arrows</p> <p><i>Narrator:</i> and a green dashed line is visible along the outside border of your screen. The green dotted line lets you know that everything inside of this area will be recorded on your screen.</p> <p><i>Timing:</i> 0.35 – 0.45 (11 seconds)</p>	
<p>3. The Recorder - Select Full Screen, cont'd</p> <p><i>Narrator:</i> It's possible to select a custom region of your screen using the custom button, but we'll stick with full screen for the first recording.</p> <p><i>Timing:</i> 0.46 – 0.52 (6 seconds)</p>	

the synchronization between the narration and what happens on the screen (G2.3). The first segment introduces the action. The narrator draws the user's attention to selecting the Full Screen option. By placing the cursor on the tool option the arrow changes into a hand. The first segment revolves around the software reaction. The narrator explains how the software reacts to the choice of this option, attending the user to the system feedback (that is, green dashed lines). The demonstration draws the user's eye to the relevant screen features by zooming out and big blue arrows. The third segment introduces the user to an alternative option. First, the segment brings the Recorder back into full view. The narrator mentions the option of recording from a section of the screen. The hand points to the object but the narrator merely mentions the possibility for action, thus leaving the Recorder display intact.

Guideline 3: Enable Functional Interactivity

Guideline 3.1: Pace the Video Carefully

Guideline 3.2: Enable User Control

Description. Enabling functional interactivity is a matter of built-in design features and user affordances. On the one hand it means optimizing the production of the video for its processing by the user. On the other hand it means facilitating user control (G3).

The scenario of the unfolding instructional events in the video should fit the user's resources and capabilities (see Kennedy, 2004; Mestre, 2012; Wouters, Tabbers, & Paas, 2007). An extremely important facet in realizing such a fit is system-based pacing which can be operationally defined as demonstrating and explaining task execution at just the right speed for the user (G3.1). In a recorded demonstration this pace often depends on the narrative. The advice is to employ a conversational tempo and not to speak instructions too quickly (Morain & Swarts, 2012). Designers occasionally also affect the pace by extending natural breaks with an additional two to five seconds pause.

Another important means for achieving functional interactivity is the affordance of user control (G3.2). User control can be defined as the influence of the user on the playing of the video. The most common

user controlled actions for video are starting, pausing, stopping, and replaying. These standard media player controls enable the user to look back at segments, to pause the video, and to skip familiar segments, among others. Recorded demonstrations generally do not have affordances for more advanced user controlled actions such as close-ups, zooming, alternative perspectives, and control of speed that can give rise to highly differentiated, and unique video usage (see Merkt, Weigand, Heier, & Schwan, 2011).

Support. According to the Limited Capacity Model of mediated message processing, the ongoing stream of information in a video constantly challenges the user to decide which information to encode, process and store (Catrambone & Yuasa, 2006; Linek, Gerjets, & Scheiter, 2010; Palmiter, 1993). New video information must continuously be attended to, brought into working memory, and eventually stored into long-term memory. Simultaneously, the user needs to activate prior knowledge and connect this to the incoming information. Besides being dynamic and running parallel, these processes are also interactive. The incoming message influences the user's processing, but also the user's motivation and cognition affects how the message is perceived, encoded, stored, and eventually retrieved (G3).

An important facet for achieving functional interactivity that primarily resides within the video itself, is system-based pacing (G3.1). Finding the proper pacing for the video is a difficult balancing act. A slow demonstration can be boring, which can make the user inattentive. A fast demonstration can overload the user who may react with an automatic response, or stop viewing altogether (compare Bovair & Kieras, 1991; Linek et al., 2010).

In a general sense, the provision of any form of user control (G3.2) is an invitation for the user to become an active learner. According to constructivism, students' initiatives and efforts in constructing meaning play an important role in their learning (Bransford, Brown, & Cocking, 2002). Students who are actively engaged in examining the subject matter learn more deeply than students who passively process information (Mayer, 2003a).

The guideline of providing user control (G3.2) speaks to the *apprehension principle* from Tversky, Bauer-Morrison, and Betrancourt (2002), which states that animations should be readily and accurately perceived and comprehended. The important obstacle of

fleetingness of video, and the risk of lack of perception and comprehension that comes with it, can often, but not always, be overcome with user control of the playing of the video. The argument is that pausing, stopping, and replaying can reduce working memory demands. They allow for re-inspection and focusing on actions and specific screen objects or sections. They enable the user to exert voluntary or controlled allocation of processing resources. "Interactivity may be the key to overcoming the drawbacks of animation as well as enhancing its advantages" (Tversky et al., 2002, p. 258). The influence of user control on learning is also acknowledged in multimedia research. In his segmenting principle, Mayer (2005) contends that learning is advanced when the learner can break down a video in meaningful segments rather than as a continuous information stream.

Research from Schwan and Riempp (2004) has found that special media player controls, such as the capability of varying the speed from slow motion to high speed and a change direction option (that is, backwards or forwards), facilitate learning. Participants in their study viewed four videos on tying nautical knots. In the control condition the videos ran continuously and participants could only replay the entire video, whereas in the experimental condition they could stop the video at arbitrary points and could use the indicated user controls. The latter condition yielded better results. Participants with user control needed less practice time to learn to tie the knots.

Ertelt (2007) examined the influence of a combination of system-based pacing and user control. That is, the study compared a situation in which a video ran continuously to one in which a rounded-off video segment was automatically stopped and the user had to press play to continue. The idea was that the built-in stop was considered a signal of an important boundary and prompt to reflect on the video segment the student had just been watching. In addition, asking the user to initiate the resume play mode was believed to guard against viewer passivity (see Salomon, 1984), which is also known as the "couch potato effect." The tested prediction was that learning would be enhanced with the manipulation. This was found. The segmented video with the stops did lead to a significant higher increase in procedural knowledge than the uninterrupted version (see also Mayer & Chandler, 2001; Spanjers, Van Gog, & Van Merriënboer, 2010; Tabbers & De Koeijer, 2010).

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Figure 8. User Control Tool Activated for the Recorder for Camtasia Studio 7



Design Examples. In the Getting Started series for Camtasia Studio, the pacing of the video is a bit fast. Apart from the suggestion that a conversational tempo should be kept, the literature offers no precise guidance on the right speed for the narration. In our experience, it should be neither very high nor very low, and should be evaluated by a native speaker.

The default option in TechSmith's videos is that the interface does not display the common "user control tool" that affords interactivity (see Figure 6). However, this tool can be activated simply by resting the mouse on the progress bar (G3.2, see Figure 8). Unless there is user input, the progress bar and the tool automatically disappear after about three seconds. We prefer to let the learner choose to make the tool disappear.

Figure 9 illustrates the application of the guideline to enable functional interactivity (G3) in our procedural instructions in the video "Adjusting the right margin" in Word. The narrative supports the demonstration, telling the user what to do and what happens on the screen. Also, the user is informed about the meaning of the object that appears. Only the most essential information is conveyed to reduce the risk of overloading working memory. The narrative is told by a female voice who speaks her native language. Finding the right pace was essentially a matter of trial-and-error, a judgment call of what seemed neither too fast nor too slow.

By default user control is enabled (G3.2). That is, the user control tool appears when the cursor moves into the right column of the video. This tool remains visible all the time during video play, disappearing only when the user moves the cursor over to the left column with the table of contents.

Figure 9. Three Consecutive Fragments from the Procedural Instructions in the Video "Adjusting the Right Margin" in Word

<p>1. Adjusting the right margin</p> <p><i>Narrator:</i> Click and hold the mouse button. A dotted line appears. This line will be the right margin.</p> <p><i>Timing:</i> 0.25 – 0.36 (12 seconds)</p>	
<p>2. Adjusting the right margin, cont'd</p> <p><i>Narrator:</i> Press the Alt key and keep it pressed down. The ruler changes into a line with numbers</p> <p><i>Timing:</i> 0.37 – 0.43 (7 seconds)</p>	
<p>3. Adjusting the right margin, cont'd</p> <p><i>Signaling:</i> Zooming in</p> <p><i>Narrator:</i> Drag the margin to the left, about 2.5 centimeters. Release the Alt key and mouse button. The right margin is now adjusted.</p> <p><i>Timing:</i> 0.44 – 0.56 (13 seconds)</p>	

Segment 2 contains a deliberate pause of about five seconds, which slightly slows down the pace of the presentation. The pause follows immediately after the narration, giving the user time to absorb the information. The user can let the situation sink in and be prepared for the following step. More generally, the pacing of the video requires special attention to moments such as these where no narrative and also no physical action(s) are taking place. The tendency is to let the recorded demonstration move forward. We decided not to do so, but to pause instead when we wanted the user to assess the situation briefly and study the interface.

Guideline 4: Preview the Task

Guideline 4.1: Promote the Goal

Guideline 4.2: Use a Conversational Style to Enhance Perceptions of Task Relevance

Guideline 4.3: Introduce New Concepts by Showing Their Use in Context

Description. A preview of the task ahead brings across the big picture, orients the user, and should help in developing a general, condensed schema for task completion (G4). In addition, a preview can illustrate the meaning of the task or goal. Before-after displays are especially strong stimuli that can entice the user to view the video and find out about unanticipated possibilities for using the software and how to accomplish those (G4.1). They derive their strength from combining concreteness with provoking a mental conflict, which are motivational principles for increasing student attention (Keller, 2010). To further increase user interest in the tasks that are demonstrated, the narration should be personal rather than formal (G4.2). Previews should not give detailed step-by-step instructions. A preview can also be designed as a tour of the main screen components (Plaisant & Shneiderman, 2005). As it does so, it should introduce the critical vocabulary by explaining the concepts and objects when they appear during the demonstration (G4.3).

Support. Research on experiential learning lends support to the guideline to preview the task (G4). This literature indicates that people can get so easily entangled in task engagement that they do not take the time to reflect on their experiences. As a result, the learning effects of the experience tend to be low (e.g., Fanning & Gaba, 2007; Lederman, 1992). A preview can increase learning by raising user awareness before actually beginning the task (Kriz, 2011). It can direct the user's attention to the main goals of the experience, helping them sift the wheat from the chaff when they actually watch the demonstration of the procedure. A preview may also provide background information, and give the user some prompts and hints.

Educational research on advance organizers also supports the guideline to provide a preview. Advance organizers have been found to be effective for knowledge development (Ambard & Ambard, 2012; Gurlitt,

Dummel, Schuster, & Nückles, 2012; Hartley & Davies, 1976). A preview can play the same roles as an advance organizer. It can provide “ideational scaffolding for the stable incorporation and retention of the more detailed and differentiated material that follows” (Ausubel, 1968, p. 148). In other words, a preview can serve as an overall framework for the learning that lies ahead, helping the users get acquainted with these tasks.

Support for the guideline to provide a preview (G4) can also be found in research on event cognition (Zacks & Tversky, 2003). This research indicates that procedural learning is best supported by a combination of top-down and bottom-up methods. While the preview provides users with a top-down view of the larger picture, the procedural instructions supply a bottom-up view that enables users to achieve task completion.

Guideline 4 also aligns perfectly with the *pre-training principle* advocated by Mayer (2005). This principle holds that users should be taught the names and behaviors of system components prior to being instructed on how these components interact (see also Swarts, 2012). The reason is a reduction of cognitive load. For users to take in all the information about screen objects and their locations and also attend closely to the demonstration to learn how to do a task can just be too much.

Farkas (1999) mentions the guideline to promote the goal (G4.1) as an important rhetorical aspect in the construction of procedural discourse. One way to promote the goal comes from source credibility. Software companies, like TechSmith, who instruct their own clientele, have a good head start in this respect. Another facet that contributes to engaging or persuading the user comes from targeting the instructions to the right audience. The visual presentation can also be important. Showing rather than telling what the software does may increase the user's perceptions of task relevance. The demonstration may further contribute to promoting the goal by convincing the user that task execution does not require an inordinate effort. As Farkas indicates, promoting the goal may make the instructions more verbose than “bare statements about states and actions” (p. 44). This is one reason that this guideline is associated with the preview rather than the instruction itself.





Guideline 4.2. is reflected in Mayer's (2005) *personalization principle*, which holds that instructional messages should be presented in conversational rather than formal style. This principle rests on the assumption that messages that use a first or second person voice are

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more appealing to the user, and thereby stimulate more active processing of the instructions. In addition, it is assumed that the familiar style of such a message requires less cognitive effort. Research indicates that this type of personalization significantly enhances learning and slightly raises interest as compared to a more formal style (Mayer, Fennell, Farmer, & Campbell, 2004; Moreno & Mayer, 2000, 2004).

The guideline to explain new concepts in context (G4.3) fits with the *just-in-time principle* that is advocated in educational research (e.g., Van Merriënboer, Kirschner, & Kester, 2003). According to this principle, learning is facilitated when prerequisite knowledge is presented or activated at the point when the user needs that information to perform the task. Providing just-in-time information reduces the load on the user's working memory.


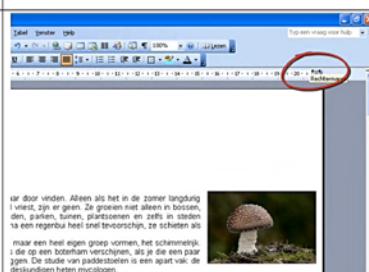

Figure 10. The Preview that Begins the Video “Add a Title Clip” from the Tutorial for Camtasia Studio 7

<p>1. Add a Title Clip</p> <p><i>Narrator:</i> Title clips can be added at the beginning, end or between any two clips on the time line.</p> <p><i>Signaling:</i> Arrows</p> <p><i>Timing:</i> 0.00 – 0.08 (8 seconds)</p>	
<p>2. Add a Title Clip, cont'd</p> <p><i>Narrator:</i> Title clips are helpful to introduce your video,</p> <p><i>Timing:</i> 0.09 – 0.11 (3 seconds)</p>	
<p>3. Add a Title Clip, cont'd</p> <p><i>Narrator:</i> a new topic or section within your video,</p> <p><i>Timing:</i> 0.12 – 0.14 (3 seconds)</p>	
<p>4. Add a Title Clip, cont'd</p> <p><i>Narrator:</i> or even to use as an end slide to conclude your video</p> <p><i>Timing:</i> 0.15 – 0.20 (6 seconds)</p>	

Design Examples. Figure 10 shows the first twenty seconds from the “Add a Title Clip” instructional video for Camtasia Studio 7. The four segments illustrate a preview that conveys the concept of inserting a title clip (G4). The first segment concentrates on the software tool for inserting a clip. The prototypical blue arrows emphasize and illustrate the possibilities. The next three segments that follow in quick succession serve to promote the goal (G4.1). They illustrate a real-life example of inserting title clips.

Figure 11 shows three segments from the preview in our video on “Adjusting the margins for the whole text” in Word (G4). The first segment displays the start situation. The opening question in this segment draws the users’ attention to the design problem. The user is prompted to look around to see what is amiss. The screen shot makes the design task, the goal, concrete;

Figure 11. Three fragments from the Preview Video “Adjusting the Margins for the Whole-Text” in Word

<p>1. Adjusting the margins for the whole text</p> <p><i>Narrator:</i> What strikes you in this text? The margins are way too small. To make the text look better, you can increase the white space on the left and right hand sides.</p> <p><i>Timing:</i> 0.00 – 0.18 (18 seconds)</p>	
<p>2. Adjusting the margins for the whole text, cont'd</p> <p><i>Narrator:</i> You can change the right hand margin with the double arrow ...</p> <p><i>Signaling:</i> Zooming in and Colored Circle</p> <p><i>Narrator:</i> ... which appears when you position your cursor on the ruler above the roof icon.</p> <p><i>Timing:</i> 0.19 – 0.33 (15 seconds)</p>	
<p>3. Adjusting the margins for the whole text, cont'd</p> <p><i>Narrator:</i> By moving the arrow correctly, you will see this. The right hand margin has changed. To make the text look even better, you can increase the margin on the left hand side, too.</p> <p><i>Timing:</i> 0.34 – 0.52 (19 seconds)</p>	

the user can see that there is a formatting problem (G4.1). In line with the findings from worked examples research, the user is prompted for self-discovery of the problem, rather than being told directly up front (Atkinson, Renkl, & Merrill, 2003; Schworm & Renkl, 2007). The narrative also introduces the word margin, and immediately explains it in lay terms a sentence later (G4.3). Furthermore, there is a deliberate and frequent use of the personal pronoun “you” to emphasize the message that these goals should be important for the person watching the video (G4.2).

The second segment introduces the solution path. The narrative again mentions the word margin, and promises a solution if users manipulate the right object (that is, the double arrow). The video zooms in and highlights that object while the narrator introduces two new concepts, ruler and roof icon, that are shown on the screen (G4.3).

The third segment shows the outcome. The whole screen is displayed again while the narrator tells the user that the double arrow should be moved to produce the desired change. The narrator further invites the user to look carefully and discover that the goal of changing the right margin has been achieved (G4.1).

Guideline 5: Provide Procedural Rather Than Conceptual Information

Description. Users consult a “how to” video because they wish to know what they need to do to complete a task. Such a video should therefore walk the user through the successful and immediate accomplishment of a task (G5). All of the information must be geared towards this goal. Conceptual information should be presented only when it contributes significantly to the user’s task understanding, does not distract too much, and does not require an inordinate amount of time.

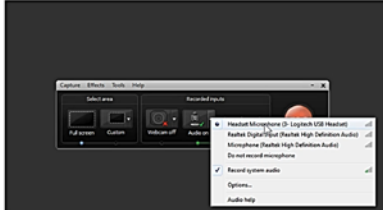

Support. Guideline 5 accords with a key design principle from minimalism which holds that users should be supported in their task completion, because that is their foremost reason for consulting instructions (Carroll, 1990; Van der Meij & Carroll, 1998). Plaisant and Shneiderman (2005) likewise indicate that recorded demonstrations should concentrate on conveying procedural information.

If procedural *learning* is the goal, and not merely successful task completion, it is not enough to demonstrate the step-by-step actions by the user

and the changes on the screen. The user should also be stimulated to reflect (Van der Meij, Karreman, & Steehouder, 2009). Achieving both goals together is a challenge; the designer must find a way to both maintain the intricate user action-software reaction pattern of task execution and to interrupt that flow. The best moment for such an interruption is at points of subtask completion. Precisely then are users likely to benefit from a short pause in which they can reflect on the just completed task. They can possibly even benefit from a preview of what follows. The research from Ertelt (2007) has shown that such built-in moments of reflection increase learning from instructional video.

Design Examples. Figure 12 shows two consecutive segments from the instructions on the Recorder in Camtasia Studio 7. The demonstration is conceptual rather than procedural (G5). The settings that are discussed are not core tasks that the user needs to learn to perform in the tutorial. Rather, the discussion gives complete coverage of the tool options. Such a discussion would be suitable for a reference guide. For a tutorial, it is not. The information is not immediately useful, and may perhaps never be so for the user. The second segment further shows that the narrated text is

Figure 12. Presentation of Audio Recording Options in the Video on the Recorder for Camtasia Studio 7

<p>1. The Recorder - Recorded inputs</p> <p><i>Narrator:</i> If you have multiple audio recording devices connected, expand the audio menu and choose your input source. Your system audio is also recorded by default. This is the audio that comes out of your speakers.</p> <p><i>Timing:</i> 1.12 – 1.24 (13 seconds)</p>	
<p>2. The Recorder - Recorded inputs, cont'd</p> <p><i>Narrator:</i> System audio is added to a separate audio track on your timeline. If you don't want the system audio recorded, uncheck this option in the audio menu. I'll go ahead and uncheck system audio for this example.</p> <p><i>Timing:</i> 1.24 – 1.37 (14 seconds)</p>	

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also displayed on the screen. According to multimedia theory (Mayer, 2001, 2005c) this is an unwanted duplication that can cause overload (G2.2).

Figure 9 illustrates the application of guideline 5 in our procedural instructions on “Adjusting the right margin” in Word. The narrative presents only the most essential information needed for task completion. Actions and objects are described but not explained. For instance, there is no discussion about the nature of the ruler.

Actions presented as commands are the preferred choice for this type of information (Farkas, 1999; Van der Meij et al., 2009). In contrast to the preview, there is a dearth of personal pronouns (for example, “you”). This is done to make the instructions as short and crisp as possible.

Guideline 6: Make Tasks Clear and Simple

Guideline 6.1: Follow the User’s Mental Plan in Describing an Action Sequence

Guideline 6.2: Draw Attention to the Interconnection of User Actions and System Reactions

Guideline 6.3: Use Highlighting to Signal Screen Objects or Locations

Description. The main idea behind this guideline is that the user should be instructed with simple, prototypical explanations on how to achieve a task (G6). Clarity and simplicity partly derive from demonstrating a meaningful, realistic task, and leaving out all non-essential information. The sequencing of the actions and corresponding narrative should follow the sequence in which the user physically and mentally engages in task execution (G6.1).

The instructions are best presented as prototypical streamlined steps. That is, they should inform the user about a goal or purpose, and tell the user about the actions and states that lead to goal achievement. The imperative voice is best suited for describing the user’s actions (Farkas, 1999; Van der Meij, Blijleven, & Jansen, 2003; Van der Meij & Gellevij, 2004). The actions of the user obviously affect the reaction from the software. There is an intricate relationship between the two; user action and system reaction are therefore best seen in tandem (G6.2).

Occasionally, the situation requires special user attention to a screen element or location. Signaling of the mouse cursor, adding circles around screen objects and spotlighting features are among the many techniques that can be employed to grab the users’ attention (G6.3). These signals should be clearly perceived as imposed. The user should not confuse them with the real objects belonging to the interface.

Support. Guideline 6 resonates with the *apprehension principle* from Tversky et al. (2002), which states that animations should be readily and accurately perceived and comprehended. It is essential for the video to be optimally designed for task demonstration if it is to succeed in this respect. The content of the video should come from a task example that is easy to understand, yet realistic enough to yield transfer. Generally, this means that it is stripped of any adornments. Moreover, the demonstration should present the most basic or insightful method (compare Van der Meij & Carroll, 1998).

Bethke et al. (1981) refer to the guideline to make tasks clear and simple (G6) in their second step of designing for usability. They suggest that designers attend to factors of simplicity, concreteness, and naturalness to make information easy to understand. Simplicity can be realized by using a vocabulary that suits the audience and by keeping the instructions for task accomplishment within the limits of the user’s cognitive capacities. The latter tends to be translated into the suggestion to break down sizeable tasks into manageable but still meaningful subtasks that require no more than three to five actions to complete (Van der Meij, & Gellevij, 2004). Concreteness can be achieved by presenting appropriate examples, pictures, and descriptions and by making these specific rather than general or abstract. Naturalness means that the sequence of the information in the instructions should match the most suitable order of steps for task completion by the user. That trajectory should also include checkpoints for the user to monitor progress.

Guideline 6 also accords with Mayer’s (2001) *coherence principle*, which holds that multimedia presentations can cause cognitive overload when they contain too much non-essential or extraneous information. To achieve coherence, the designer is advised to weed out all information that is not immediately meaningful for the user’s task. Slashing the verbiage is also a fundamental design principle in minimalism (Carroll, 1990). Likewise, Plaisant and

Shneiderman (2005) suggest cutting all unnecessary words as a special design tip in the construction of recorded demonstrations.

The guideline to follow the user's mental plan in describing an action sequence (G6.1) originates with Dixon's foundational research (1982). According to Dixon, people who must carry out (written) instructions do so by constructing a mental plan that consists of a hierarchy of action schemas (see also Zacks & Tversky, 2003). One of the interesting implications of this research is that when the user's actions vary under certain conditions, the instructions should begin by stating the conditions. This view is also evident in the advice from Farkas (1999) on extensions of the basic action step. According to that advice, facilitating modifiers and conditional steps should be given before the basic action step. Thus, it is better to say "On the File menu, click New" than the other way around.

According to the streamlined-step model (Farkas, 1999) the basic action step preferably begins with an imperative verb followed by an object (for example, Click Home). Farkas' assertion that the fundamental unit for the user's behavior is a coupling of an action with an object is also supported by theories on event cognition (Zacks & Tversky, 2003). But this is only a one-sided view. In procedural instructions for software use, the software reaction is also critically important. User action and system reaction depend upon each other. The Four Components Model (Van der Meij et al., 2003; Van der Meij & Gellevis, 2004) emphasizes this dependency by considering both together as a key component in designing instructions (G6.2). The reaction part in the component provides feedback. Immediate feedback has been found superior to delayed feedback in procedural skills learning (Shute, 2008).

Even an animation that is optimally designed to convey what it depicts may fail due to the users' limited processing capacities. Users may find it difficult to see properly what an animation shows, and they may also fail to understand its meaning. Highlighting can help. It is a widely used technique for drawing user attention (G6.3). By foregrounding vital areas or objects, the "noise" of the video is reduced.

In the multimedia literature the functionality of highlighting is known as the *signaling principle* (Mayer, 2001). According to this principle, learning is enhanced when there are cues about the organization of information. The placement of the signaling devices

further exemplifies a special instantiation of Mayer's (2001, 2005b) *spatial contiguity principle*, which holds that information that belongs together (for example, words and pictures) should also be presented in close proximity. Thus, the signals should be positioned in the vicinity of the object that they are meant to highlight. Empirical research on animations suggests that selection cues significantly affect user behavior and learning (e.g., Amadieu, Mariné, & Laimay, 2011; De Koning, Tabbers, Rikers, & Paas, 2010). Morain and Swarts (2012) likewise reported that good tutorial videos structurally employed highlighting techniques to draw the viewer's attention to what was relevant whereas average or poor video do so incidentally, or not.

Design Examples. Figure 13 shows a sequence of five segments from the video "Editing Dimensions and Save Project" which discuss the customization of the video size. There is too much information about alternatives, possibly because the Camtasia Studio 7 "Getting Started" series is designed as a reference guide rather than a tutorial. This makes the task more complex than it should be for first-time users (G6).

Preceding the displayed segments in Figure 13, the narrator has talked to his audience about setting the dimensions for producing and sharing one's video on a blog, the Web, an iPhone, or an iPod Touch, among other options for sharing. In the end, however, the narrator indicates that he will demonstrate the default option. Segment 1 appears immediately thereafter. The user is, once again, instructed about an alternative, namely custom settings. The numbers for width and height are selected on the screen, but no actions are taken because they are already the correct numbers. Later, in segment 5 the narrator speaks of the "New editing dimensions". This is odd, because the displayed numbers have stayed as 640 and 360 right from the start, when the Editing Dimension Box was displayed. This sequence of events is at variance with the user's mental plan (G6.1).

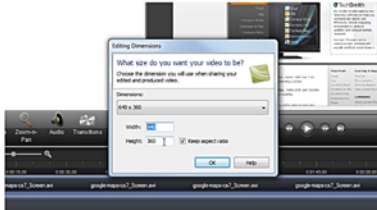
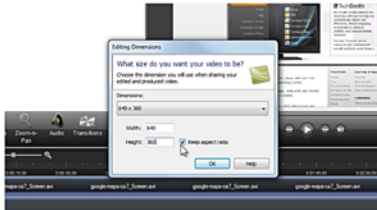
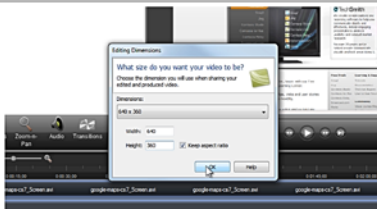


There is a good alternation between user action and system reaction. The narrative informs the user about what can be done. The movements of the cursor reveal that the action is performed, after which the demonstration displays the effect on the interface (G6.2).

There is a brisk pace here, and in the other videos in the "Getting Started" series for Camtasia. We fear that for the novice it may be somewhat too fast, yielding an adverse effect on perception and understanding. One possibility to keep the novice user aboard would be to

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insert a deliberate pause (for example, in segments 2 and 5). Even a pause as short as 2 seconds might suffice for the user to reflect on the demonstration that has just gone by (Spanjers, Van Gog, & Van Merriënboer, 2012;

Figure 13. Five Consecutive Segments in Video 2, “Editing Dimensions and Save Project,” from TechSmith’s “Getting Started” Series for Camtasia Studio 7


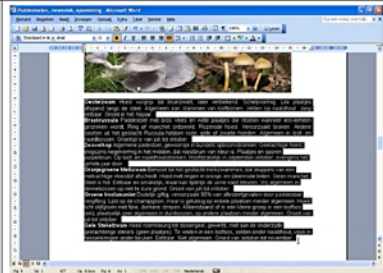
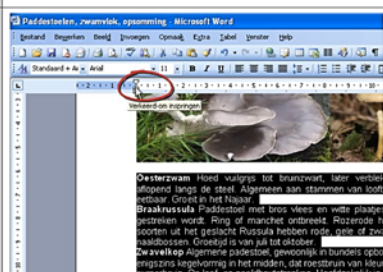
<p>1. Editing Dimensions and Save Project - Customizing the video size</p> <p><i>Narrator:</i> You can also enter in your own custom width and height here.</p> <p><i>Timing:</i> 1.00 – 1.14 (5 seconds)</p>	
<p>2. Editing Dimensions and Save Project - Customizing the video size, cont'd</p> <p><i>Narrator:</i> And I recommend leaving this box checked to keep from stretching your video and reducing the quality</p> <p><i>Timing:</i> 1.15 – 1.18 (4 seconds)</p>	
<p>3. Editing Dimensions and Save Project - Customizing the video size, cont'd</p> <p><i>Narrator:</i> Click OK to close this dialogue box</p> <p><i>Timing:</i> 1.19 – 1.21 (2 seconds)</p>	
<p>4. Editing Dimensions and Save Project - Customizing the video size, cont'd</p> <p><i>Signaling:</i> Zooming out</p> <p><i>Narrator:</i> and the preview window displays your recording</p> <p><i>Timing:</i> 1.22 – 1.23 (2 seconds)</p>	
<p>5. Editing Dimensions and Save Project - Customizing the video size, cont'd</p> <p><i>Signaling:</i> Highlighting</p> <p><i>Narrator:</i> with the new editing dimensions.</p> <p><i>Timing:</i> 1.24 – 1.26 (3 seconds)</p>	

Spanjers, Wouters, Van Gog, & Van Merriënboer, 2010). After having digested that information, the user would be more ready to attend to the new video instructions.

Segment 5 of Figure 13 shows an application of guideline 6.3. Again, there is a fine sequence of images. First, the user gets to see the preview window. Thereafter, the signals draw the user's attention to the effect of the earlier choice of setting. There is also consistency in how the signals are presented. They always reside clearly on top of the interface, and they are always of the same colour (G6.3).

Figure 14 illustrates how we applied Guideline 6 to make tasks clear and simple in our instructions on Word's formatting options. The figure displays three consecutive segments from the video “Improving a list”. The demonstration uses a simple, prototypical example. That is, first, each sentence from the list begins with the target words. Second, the target words are presented in

Figure 14. Three Consecutive Segments from Our Video “Improving A List” in Word

<p>1. Improving a list</p> <p><i>Narrator:</i> Move the cursor to the beginning of the list. Click and hold the mouse button. Move to the end of the list and then release the mouse button.</p> <p><i>Timing:</i> 0.15 – 0.41 (27 seconds)</p>	
<p>2. Improving a list, cont'd</p> <p><i>Narrator:</i> The list is now marked.</p> <p><i>Timing:</i> 0.42 – 0.46 (5 seconds)</p>	
<p>3. Improving a list, cont'd</p> <p><i>Signaling:</i> Zooming in and Colored Circle</p> <p><i>Narrator:</i> Put the cursor point on the roof of the hourglass. After a few seconds, a window stating 'Hanging Indent' appears. Press the mouse button.</p> <p><i>Timing:</i> 0.47 – 1.02 (16 seconds)</p>	

bold to make them stand out, so that the user can easily recognize the set of items that form the list. Third, the target words vary slightly in length. The length of the longest target word is an important feature for aligning the descriptions. By varying the length of the target words only slightly, the user can easily see what such an alignment requires. Fourth, the descriptions are relatively short (that is, two to three sentences). For one thing, this makes it easier to keep the whole list in view.

The narrative gives a precise account of the actions that the user must execute (G6). Because it is assumed that the user knows the basics of Word, zooming is applied without an explanation because there is no fear that it might disorient the user. Likewise, it is assumed that the user has basic general computer skills, and therefore there is no information on how to move the cursor, or which mouse button to press. In contrast, the user is informed about the time lapse of a few seconds before the pop-up explanation for the icon appears, because it is not self-evident that the user must temporarily do nothing. Wait time information is always important for users. In short, the sequence is designed to fit the user's mental plan (G6.1).

In addition, the close connection between user input and system reaction is made in the narrative and through the coupling of narrative and screenshot (G6.2). As before (see Figure 9, segment 2), we have included a deliberate pause. Segment 2 consists of a five second interval where the effect of selecting the list becomes visible. This segment gives the user a little bit of extra time to process that information, and possibly to think about what may come next. Segment 3 includes the joint application of zooming in and highlighting (G6.3). The red circle draws the user's attention; the zoom in facilitates perception of the (small) icon that the user needs to select.

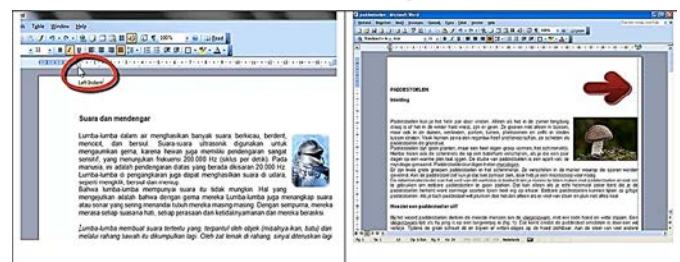
The guideline to use highlighting to signal screen objects or locations (G6.3) can readily be illustrated with examples from both sets of tutorials. Three signaling techniques are employed in the "Getting Started" series from TechSmith. The use of big blue arrows was already shown in Figure 7. Figure 15 illustrates the other techniques. To signal which sets of tools belong together a thick blue line appears around their perimeter. For dragging, another technique is used. Here a dotted line suggests movement.

In our videos on Word's formatting options, we used either a red circle or a red arrow for highlighting

Figure 15. Two Signals Used for Highlighting in Tech-Smith's "Getting Started" Series for Camtasia Studio 7



Figure 16. The Two Key Signals Used for Highlighting in Our Videos on Word's Formatting Options



screen objects and their location (G6.3). The color red and the size and shape of these signals made them stand out sufficiently from the interface. Figure 16 shows both types, illustrating that the signals were just too big to be mistaken for part of the interface.

Guideline 7: Keep Videos Short

Description. Plaisant and Shneiderman (2005) recommend keeping videos as short as possible. They suggest that a length of between 15 to 60 seconds is optimal for keeping the user engaged and minimizing what needs to be remembered together. Other researchers propose a slightly longer duration. Chan *et al.* (2010) mention a 3-minute average as "the usual length of a video clip on medical consultation in problem-based learning" (p. 764).

Perhaps the most difficult design issue is to create *meaningful* videos for tasks that are too long to display in one demonstration (see Spanjers, Van Gog, et al., 2010; Zacks, Speer, Swallow, Braver, & Reynolds, 2007). The designer can use an arbitrary time limit for breaking up a complex task, but this is hardly satisfactory. What matters more is that the user perceives a video as having a clear beginning and end. This generally means that the designer must look for structural changes such as goal or sub-goal completion.

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Physical changes on the screen can be meaningful moments for creating segments within a video. However, we prefer to use the deliberate pause for marking these event boundaries (see Figure 9, segment 2, and Figure 14, segment 2).

Support. The transitory nature of videos can make it hard for the user to perceive them accurately and comprehend their content. Researchers have investigated the possibility of manipulations of temporal characteristics of video. One such temporal factor is segmentation, which can be defined as dividing the stream of information into smaller units with identifiable beginning and end points (Spanjers, Van Gog, et al., 2010). Empirical research shows that segmentation increases learning (e.g., Khacharem, Spanjers, Zoudji, Kalyuga, & Ripoll, 2013; Spanjers, Wouters, et al., 2010; Zacks et al., 2007). The positive effect of segmentation on learning is ascribed to two distinct phenomena: pausing and temporal cueing.

Pausing is done to reduce cognitive overload that may arise from video's transitory nature. Pausing involves stopping the video at key moments to give the viewer extra time to take in the information that has been presented. One variant of this stop option is user controlled. In that case, the video includes full-stop moments that depend on a user action for video replay or continuation. Another variant involves temporary-pause moments that resume play after a brief automated pause. Empirical research indicates that even short pauses of 2 seconds may suffice to benefit the user (Spanjers, Wouters, et al., 2010).

Temporal cueing is done to create meaningful boundaries for segments. According to event theory, people perceive and conceive dynamic representations as sets of discrete events (Zacks et al., 2007; Zacks & Tversky, 2003). They naturally break down the continuity of the stream of information of such representations into meaningful moments. The designer can aid the user in making these demarcations. That is, segmentation can decompose a continuous display of images into a limited set of main events that convey the underlying structure or schema. This is probably more effective than relying on the user's own efforts at constructing such meaningful segments (Spanjers et al., 2012).

In multimedia learning theory, the phenomenon of presenting the user with meaningful and manageable units of information is known as the *segmenting principle* (Mayer, 2005b). According to this principle,

Figure 17. The Original Table of Contents of the “Getting Started” Series for Camtasia Studio 7

Getting Started Series			
1. Record Full Screen 3:43	3. Overview of Camtasia Studio Interface 4:05	5. Cut Unwanted Video and Audio on the Timeline 2:19	7. Add a Transition 2:01
2. Editing Dimensions and Save Project 3:12	4. Apply SmartFocus to Zoom and Pan 3:52	6. Add a Title Clip 2:29	8. Share Your Video on Screencast.com 3:45

Figure 18. The Table of Contents for the Videos in Our Tutorial on Word's Formatting Options, With Timings Added

Title	Duration
1 Adjusting the margins for the whole text - Preview	1.12
1.1 Adjusting the right margin	1.01
1.2 Adjusting the left margin	1.05
2 Adjusting the margins for a text segment - Preview	1.33
2.1 Indenting a citation to the left	0.55
2.2 Indenting a citation to the right	1.05
2.3 Indenting the first line of a paragraph	1.19
2.4 Improving a list	1.37
3 Creating an automatic table of contents - Preview	1.00
3.1 Styling the main headings	1.42
3.2 Styling the subheadings	1.16
3.3 Creating an automatic table of contents	0.52
3.4 Browsing with the table of contents	0.47
3.5 Updating the table of contents	1.40

designers should decide which separate videos to divide a tutorial into, so creating sub-tasks, and if these are still relatively long, to break these down into smaller bite-sized segments.

Design Examples. TechSmith recently changed the presentation of the titles of all of its instructional videos. The new format for the “Getting Started” series for Camtasia Studio 7 was shown earlier in Figure 3. We prefer the original version because the titles are easier to scan, and users can see the duration of the videos. Figure 17 shows that the length of the videos ranges between 2 to 4 minutes, with an average of about 3 minutes.

The original table of contents for our videos on Word's formatting options does not show the segment

length (see Figure 4). Figure 18 gives this information for the regular playing time of each video. It shows that the duration of the average preview and procedural video was just over one minute. In addition, there was a limited range.

The titles signal that each video revolves around a rounded-off task. There is a clear formatting goal and each video displays the whole process from start to finish to achieving this goal. However, when a formatting task threatened to become cumbersome it was divided into meaningful sub-tasks. For example, we separated the task of formatting the margins of a whole document into two separate videos, one on adjusting the right and one on adjusting the left margin. Each subtask made sense independent of the other; their sequencing was chosen so that the simpler task (right margin setting) preceded the more complex one (left margin setting). The task split led to a significant reduction in video length and task complexity. Constructing an automatic table of contents was likewise decomposed into a set of manageable sub-tasks.

Guideline 8: Strengthen Demonstration with Practice

Description. A classic design approach in education that is recommended for software training as well is the coupling of instruction and practice. During instruction, the problem and the solution processes are explained. During practice, users actively solve problems on their own. Practice serves to consolidate and enhance learning. In addition, it is a self-test for users to see whether they can apply what has been taught. To support practice, users should be given exercises that clearly set the starting condition and end goal for the user. Empirical research indicates that exercises are more effective learning aids than on-your-own sections (Glasbeek, 2004; Wiedenbeck, Zavala, & Nawyn, 2000). Several repetitions of practice are called for when the goal is to compile and automate procedures.

Support. The value of coupling a recorded demonstration with practice (G8) was demonstrated in an experiment by Ertelt (2007; see also Rieber, 1991). The study found that the opportunity for practice after video instructions significantly improved user performance after training compared to the non-practice control condition. In Ertelt's study, access to the video instructions was blocked during practice for reasons of

Figure 19. Invitation for Practice in Our Tutorial on Word's Formatting Options



experimental control. For video instructions that are publicly available, this is an unrealistic restriction. The study by Shippey *et al.* (2011) on skills acquisition of medical students shows that users benefit considerably from being able to access the video during practice. The study showed that open access yielded a significant advantage for skills retention in comparison to a situation in which video access was blocked.

The important role of an after-training activity in experiential learning is well-known. Research indicates that learning can be increased significantly and substantially when users reflect on their experiences (Fanning & Gaba, 2007). A prevalent and effective type of stimulus used after the task engagement is debriefing, which can be defined as facilitated or guided reflection. A recent meta-analysis reported an average gain of 20% to 25% with debriefing (Tannenbaum & Cerasoli, 2013).

Design Examples. The right column in Figure 19 shows the last slide from our video on “Styling the main headings.” It contains an invitation for practice (G8). During practice, users do not receive any new instructions, but they can look back to the video if necessary (in experiments this option is sometimes blocked). They are invited to try out the instructed skills, informed about the goal they should try to achieve, and told what practice file can be used in that effort. To enhance skill consolidation, the texts in these practice files were structurally identical to the showcased demonstration files.

Having users work with practice files in the exercises after instruction has several advantages. One, users do not need to create a document or other object from scratch. They can open a practice file and immediately start working on the problem it contains. Two, practice files can be optimized for task execution by making them short, simple, and exemplary. Three, practice files can be carefully prepared to address known problems.

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Conclusion

In assessing these guidelines for the construction of instructional video the reader is reminded of the fact that we have focused on tutorials. The videos should teach the basics of using a software package. After processing the videos the users should be capable of completing fundamental software tasks without the need for (repeated) help.

Informing the user about the other possibilities of the software with instructional video (referential videos) should likewise concentrate on supporting user actions. But there are at least two important differences with videos serving a tutorial function. One is that a referential video must function merely as a job aid. The user needs to be only instructed about how to achieve a task. No training files or stimuli to learn are needed. Another difference is that a referential video may need to give conceptual information because it is impossible to provide detailed, step by step information about all possible scenarios of use. A design solution that is often chosen for this problem in paper reference guides is to provide annotated displays of all the tools and menus of a program. Such displays resemble glossaries; they are mainly conceptual in nature. Their aim is to capacitate the user with knowledge about what the program has to offer them.

In this respect it is interesting to see the analogue that we found in TechSmith's video of the Recorder tool (see Figure 6 and 7). We criticized this video segment for informing the user about all the affordances of this tool. What TechSmith intended to achieve with this video segment is trying to move the user out of his comfort zone. It was an attempt to find a "perfect balance between getting good instruction and enough information to create users that not only can do the task, but have context and understanding what else they can do and when to do them" (M. Pierce from TechSmith, personal communication, February 26, 2014). The good thing about this effort is that it attempts to counteract the prevalent problem of software underuse. Another good thing is that this video includes the basic actions for making a video record of what happens on the screen. Yet another noteworthy point is that the elaborate discussion of the Recorder is apt for a referential video on Camtasia Studio because it deals

with a pivotal tool. However, we differ in opinion on the value of such a hybrid referential-tutorial video within the context of a Getting Started tutorial.

As mentioned in the introduction, we have empirically tested our set of instructional videos for Word's formatting options, using these guidelines for their basis. Three consecutive experiments have yielded substantial support for the effectiveness of these instructions versus a paper-based tutorial (Van der Meij & Van der Meij, in preparation, in review). The experiments included different Word versions, audiences and languages. That is, students from the Netherlands received instructions in Dutch, whereas students from Indonesia received instructions in Bahasa. The outcomes of these studies clearly favored the video tutorial over a paper-based version. Both on measures of motivation and indices of procedural skills development we found the video instructions to be more effective.

Among others, the students reported having experienced a stronger flow while working with video. Flow is a pleasant state. It is a signal of the users' concentration and task absorption (Vollmeyer & Rheinberg, 2006). When a user experiences flow there is an optimal balance between his or her skills and the challenges posed by the task. In addition, there was a finding of a higher increase of self-efficacy belief which indicates that students developed more confidence in their capacity to solve similar tasks. Likewise, skills development during and after training was supported more strongly with video. The students more successfully completed tasks during training. In one study (Van der Meij & Van der Meij, in review) we found that students achieved a 90% success rate during training with the video instructions as opposed to a 63% success rate for the paper-based tutorial. Similar differences between video and paper-based tutorials were found on a post-test and a retention test, signaling that the video instructions led to more learning and retention than did paper-based instructions.

By connecting the eight guidelines to principles, theories and insights from various authors and fields of study, and by also providing design examples, we have tried to identify key issues related to the intriguing nature of instructional videos for software training. The resulting patterns are potentially beneficial for researchers and practitioners.

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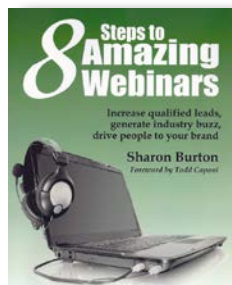
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8 Steps to Amazing Webinars

Sharon Burton. 2012. Laguna Hills, CA: XML Press. [ISBN 978-1-937434-04-5. 90 pages, including index. US\$19.95 (softcover).]



Sharon Burton more than delivers on her promise that your online seminar will be a success if you just follow her 8 Steps to Amazing Webinars. The book is written in a direct, easily applicable way. Much thought was given to the order in which the information is presented and the level of detail to

which certain elements are explained (or not explained with instructions for the reader to seek information from reliable sources).

While it would have been easy for Burton to have simply listed eight horrible mistakes and pointed to what she would have done differently, this instructional volume walks the reader through what is required to set up a sustainable Webinar program that adds potential profit to a department or company. In current economic times, this is a serious value for technical communicators looking to add skills to their repertoire. To that end, the reader feels like a student in Burton's classroom listening to her speak quite authoritatively about a topic on which she has exhaustive knowledge and a great amount of passion. Having attended both a conference session on the book and a Webinar delivered by Sharon on another topic, I can attest that she practices what she preaches.

First, Burton clearly defines for the reader the word Webinar and what it can offer to an organization. Next, you learn the options for who should run the Webinars you have decided you want to produce. While the options mostly presume that you are part of a large company or organization, the analysis also gives the consumer an inside glimpse as to why certain Webinars are more of a "sales pitch" and still others are not focused, even though they may be delivered by a member of the C-suite. Once the "who" is decided, there is the "what"...as in what topics should you talk about. The focus on audience in this section should not come as a surprise to anyone in technical communication, but the examination of what makes for a good Webinar topic was enlightening.

Because this is content you are generating, it must be marketed. The chapter on advertising focuses not surprisingly on writing good copy about your Webinar to both entice and inform your potential audience

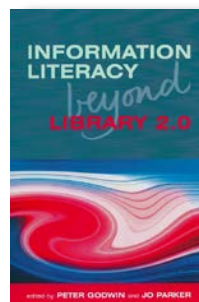
about exactly what you plan to deliver in your hour together. By the time you read the final steps, Burton has prepared you to take to the microphone and deliver your well-rehearsed material with your technology/back-up person in place should anything go awry. Finally, the author presents tips for the follow-up with the attendees and those who watched the archive or recording of your Webinar. After all, you want to have a conversation with these folks who are now interested in what you have to say and will hopefully be devoted consumers of your next amazing Webinar.

David L. Caruso

David L. Caruso currently serves as the Web content manager and social media coordinator for the National Institute for Occupational Safety and Health. He is a senior member of STC; Vice President of the Greater Pittsburgh Chapter; and former manager of the Information Design and Architecture SIG.

Information Literacy Beyond Library 2.0

Peter Godwin and Jo Parker, eds. 2012. London, UK: Facet Publishing. [ISBN 978-1-85604-762-3. 268 pages, including index. US\$99.95 (softcover).]



Specialists and non-specialists apply "literacy" to a wide variety of items: math literacy, Bible literacy, graphic literacy, TV literacy, food literacy, and so forth. Library science adds "information literacy" to that list. For librarians, information literacy includes library use, search strategies, and other activities related to locating

and using information. Librarians see their mission expanding to developing such materials as E-tutorials, E-tours, and the like for use in the new media.

Godwin and Parker's contribution is an anthology of 22 essays from 23 authors divided into three parts: updating the field, case studies, and the future. "Library 2.0" of the title refers to Web 2.0 as well as the electronic media associated with the social context: Twitter, Facebook, LinkedIn, and so forth.

Part 1 brings research in the field up-to-date starting with an earlier collection by the same editors (although the current book is not considered a second edition). Part 2 contains 11 essays that are case studies of students and how librarians are developing materials to aid them

to increase their information literacy. Part 3 contains five essays and is a look into the future.

While *Information Literacy Beyond Library 2.0* focuses on librarians, technical communicators often face similar problems. For example, how can you help users get the information they need to solve a problem? Both groups want to minimize the effort required; both face users or patrons with varying levels of competence in the media and accessing the content. So, both have a two-fold problem: providing the information and ensuring that the user or patron can access it.

Technical communicators can easily apply the concepts that the essays offer. For example, what tools do you use to get the content to work with smart phones? QR codes? Clickers? SMS? Even gaming? The answers are in the section that describes case studies and could be the most interesting for technical communicators. Although the cases involve educational environments from the secondary school through the university, they present what is essentially an answer to the question that the collection addresses: how can libraries and librarians provide instruction to enhance their patrons' information literacy? The short answer is through understanding what information literacy is and then using tools and media to provide necessary tutorials.

The essays in part 3 emphasize that libraries are changing as a result of Web 2.0. The problem now is helping people navigate the new platforms and pathways to the information in this new environment. Godwin's own final three essays address the evolving digital media and how we got there as well as the future and what's beyond Library or Web 2.0.

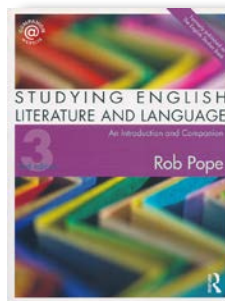
In spite of *Information Literacy* focusing exclusively on librarians, there is much helpful information, especially in the case studies, for technical communicators who are producing tutorials for a variety of platforms. While the book's price is rather high, company libraries especially could benefit from adding a copy for their collections.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he serves as guest professor at the University of Paderborn, Germany.

Studying English Literature and Language: An Introduction and Companion

Rob Pope. 2012. 3rd ed. New York, NY: Routledge. [ISBN 978-0-415-49876-0. 428 pages, including index. US\$39.95 (softcover).]



Studying English: Literature and Language: An Introduction and Companion by Rob Pope is an essential guide to some of the more nuanced aspects of earning a degree in English. He does a nice job in explaining and demystifying so much of what English students typically fail to

master until they are in graduate school. For instance, Pope reviews analytical strategies for approaching a text which many students have to learn through trial and error or by bribing their muse. This book excels as a guide to navigating an English degree.

Studying English comprises six sections: an overview of English studies, a review of analytical strategies, a compendium of literary theories, an explanation of key literary terms and topics, an anthology, and a career guide. You will view every section through the lens of academia. If you are well versed in the indirect approach of many scholars, this is a good thing. If you prefer a more direct edge to your rhetoric, it will prove infuriating.

The first four sections, which cover largely academic concerns, are strong. They offer firm grounding for a beginning and even intermediate English major. Pope uses a wonderful tactic of creating insightful dichotomies—"open discussion or hidden agenda," "repression and expression," "accent and dialect"—and exploring the spaces in-between. In doing so, he effectively describes the rich landscape of the English degree through which a student can then navigate.

The last two sections—the anthology and career advice—are problematic. First, do English majors need another anthology in such an over-canonized field? When I initially saw the section, I assumed the book was a writing primer. It wasn't until I read the introduction that I grasped the intent of including such material, though I was not and still am not convinced of the need for it.

Second, it's evident that there was little non-academic input into the career section, which is a shame. From my experience, society mistakenly believes a degree in English is an indulgence. What I have seen,

however, is that people with English degrees are highly employable in non-academic settings both for their writing skills and for their critical thinking skills. What English majors usually lack is an understanding of how to bridge the gap between applying critical thinking and writing skills in academia and applying those same skills in the workplace. I wish *Studying English* would have done a better job in meeting this need.

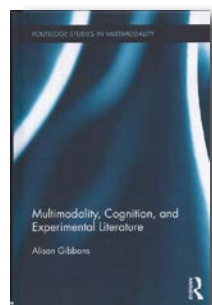
Pope's book is a great find for the first, second, or even third year English major looking to find a better understanding of their field of study. For the graduating senior or graduate student looking for advice on non-academic career options, *Studying English* probably isn't the answer.

Gary Hernandez

Gary Hernandez is a communications director for BP. He received his English literature MA from George Mason University and received his technical writing MS from Utah State University. Gary belongs to STC and IABC.

Multimodality, Cognition, and Experimental Literature

Alison Gibbons. 2012. New York, NY: Routledge. [ISBN 978-0-415-87361-1. 260 pages, including index. US\$130.00.]



Alison Gibbons investigates the cognitive impact of a growing “multimodal” literature that self-consciously and pervasively mixes text and image. Unlike traditional literature, multimodal works incorporate “Devices that draw attention to the text’s materiality” by inflecting the standard narrative plot

line with self-reflexivity (footnotes, stories within stories); interpolating graphics that point to themselves as graphics (font variation, concrete poetry, collage); and mixing literary and visual genres (horror within comedy, newspaper clippings within text) (p. 2).

This disruption of conventional narrative demands more active cognitive involvement from readers by expanding their role from relatively passive consumers into active co-creators and users of the text. As conventions from one genre (hypertext links) show up

in another (the printed book), or as footnotes become part of the fiction itself, the reader is compelled into a “performative engagement” with the text that is both intellectual and physical—the reader must now consciously flip between textual and visual elements to make sense of their relationships (p. 210).

In this way, the multimodal text creates a “bistable oscillation” in cognitive understanding, shifting the reader’s focus from looking “AT” the material text to looking “THROUGH” it, and back again (pp. 208–209). This oscillation occurs within a formal cognitive structure analogous to what linguists call deixis, words whose specific meaning depends upon the users’ knowledge of their context. The pronouns “you” or “it” can refer to any number of referents, yet are in themselves empty of a specific referent. At the narrative level, deixis can accommodate extreme, sudden, or strange shifts in literary conventions or semiotic systems. Thus, by grounding multimodal reading in narratological deixis, Gibbons develops a critical method flexible enough to interpret even the most unpredictably bistable, oscillating, multimodal texts.

The reader now assumes the role of active co-creator of the work’s meaning, connecting elements as a “user” might respond to a set of prompts. This aspect of Gibbons’ theory, usability, may be the most pertinent to technical communicators, graphic and Web designers, and other creators of interactive communication. As she suggests, her theory can facilitate the development and understanding of video games like Nintendo Wii that combine physical movement with intellectual cognition to produce fully realized, dynamic, embodied understanding. The reader as game player actively participates in a blurring of the distinction between writer, user (reader), and text, thereby creating a cognitive fusion not dissimilar to virtual environments involving physical participation (pp. 211–212).

Technical communicators may find deictic mechanisms useful in developing real-time “virtual” environments for applications that must optimize awareness and sharing of information in human-machine interaction. In this setting, the user is involved in performative engagement with the text and the machine, immersed in real-time feedback offering greater flexibility than a fixed manual or online procedure. Gibbons’ theory of deictic processing could be a rich area of investigation for technical

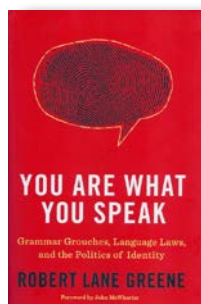
communication theorists, and for that audience, I can recommend *Multimodality, Cognition, and Experimental Literature*.

Donald R. Riccomini

Donald R. Riccomini is a member of STC and a lecturer in English at Santa Clara University, where he specializes in teaching engineering and technical communications. He previously spent twenty-three years in high technology as a technical writer, engineer, and manager in semiconductors, instrumentation, and server development.

You Are What You Speak: Grammar Grouches, Language Laws, and the Politics of Identity

Robert Lane Greene. 2011. New York, NY: Delacorte Press. [ISBN 978-0-553-80787-5. 314 pages, including index. US\$25.00.]



In *You Are What You Speak: Grammar Grouches, Language Laws, and the Politics of Identity*, Robert Greene invokes the diversity and vibrancy of language as a lens to better understand history, politics, and human behavior. Starting with what we “think” we know, Greene uses quirky facts and quick wit to

show us what we “should” know about the role of language in our world. The book is well-paced with enough cohesion for a dedicated read-through, yet amenable to a more selective or periodic reading.

Greene opens by discussing commonly perpetuated myths about language, such as “X language can’t say Y,” observing that language is integral to our humanity and thus, people invest language with great power and meaning. He then takes on the “sticklers”—language pundits such as Strunk and White who rail against abuses of language “rules” and worry that language chaos is imminent. Greene deftly highlights absurdities of the sticklers’ language claims with tales of early sticklers like Caxton and Webster, language comparisons across the ages, and evidence that these issues arise regularly across cultures.

In following chapters, Greene grounds his approach to language in linguistic research, contrasting sticklers

and linguists. Arguing the linguistic tenet of language equality, he questions whether one can actually claim the superiority of one language over another, given that “no language has ever declined in intelligibility” (p. 188). Greene summarizes the evolution of the Sapir–Whorf hypothesis, which, in its strong version, suggests that our language controls our understanding of the world.

Chapter 5 highlights Greene’s argument that language is central to the human experience. He frames the development of what we label as “languages” within the evolution of the nation-state, exemplified by English, French, and Spanish histories. Greene then presents a compelling case that language has played a key role in world wars, and instability and strife from Spain to South Africa.

Transitioning from nation-states, Greene explores the role of language academies and official government policies about language. He cites Turkey and France, then examines interesting debates about alternative Chinese and Japanese writing systems. Greene accurately notes that such language planning efforts are rarely successful, despite rationales of modernization or practicality. He proceeds to dismantle arguments that English and French are losing ground to other languages and thus somehow warrant special status to avoid minority marginalization. Greene further observes that efforts to limit language variety may be harmful, as research correlates multilingualism with higher intellectual performance.

In the final chapter, Greene offers a metaphor for languages as clouds that have moving boundaries. With thought-provoking data correlating national wealth with lower linguistic diversity, Greene challenges us to consider how to balance goals of enhanced linguistic diversity with the apparent economic incentive to limit linguistic variety.

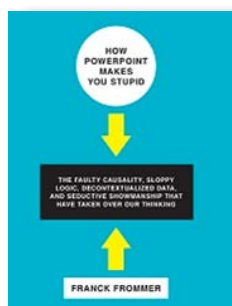
Robert Greene taps into a topic that is hard to resist—ourselves, making this book a provocative read for humans.

Michelle Moosally, PhD

Michelle Moosally has a PhD in linguistics from the University of Texas at Austin. She currently teaches linguistics, grammar, editing, and technical writing at the University of Houston-Downtown and is an STC member. Her research interests include grammar pedagogy, applications of linguistic research in writing contexts, language variation, and cross-linguistic coordination and agreement patterns.

How PowerPoint Makes You Stupid: The Faulty Causality, Sloppy Logic, Decontextualized Data, and Seductive Showmanship That Have Taken Over Our Thinking

Franck Frommer. Translated from the French by George Holoch. 2012. New York, NY: The New Press. [ISBN 978-1-59558-702-2. 288 pages, including index. US\$27.95.]



It is almost impossible for a technical communicator to never encounter PowerPoint (Microsoft's computer-assisted presentation program) by experiencing its use in a meeting, at a conference, or more directly by creating, editing, or presenting PowerPoint slides. For anyone

interested in reading an in-depth study about PowerPoint, I recommend *How PowerPoint Makes You Stupid: The Faulty Causality, Sloppy Logic, Decontextualized Data, and Seductive Showmanship That Have Taken Over Our Thinking*.

The first part of the title (*How PowerPoint Makes You Stupid*) is a slight modification of a quote originally made by Marine General James N. Mattis in 2010—"PowerPoint makes us stupid"—reflecting the arguably overreaching role the software was playing at the time in the U.S. Armed Forces.

This book is well organized with a traditional format (an introduction, eight chapters, conclusion, and notes). The introduction is worth reading to get a good summary of all the chapters and to gain an up-front understanding that the book does "not" contain any advice on how to make slides or become a better presenter with PowerPoint. What then is the book about? Frommer states: "This book tries to understand and evaluate the devastating effects of what I have chosen to call PowerPoint thinking. It tries to understand how what started out as a simple medium accompanied, accelerated, and sometimes initiated fundamental changes in business and in the transformation of information and knowledge" (p. xv).

I found Chapters 3–5 to be the most relevant when thinking about my own professional use of PowerPoint. The reason is that these chapters include a critical

analysis of some real-world examples of PowerPoint slides and major issues with using bullet points, which are so pervasive. These chapters also cover Frommer's bold paradox of PowerPoint: "...it is the favored medium for the new ideology of creativity in business while producing very controlling (and impoverishing) frames and forms of organization and thinking" (p. 85).

To briefly sum up the rest of the book: chapters 1 and 2 thoroughly explain the entire history of PowerPoint and how "meeting" evolved to mean "presentation", as well as "the general contamination of all areas by PowerPoint" (p. xvi), which includes consultants (Chapter 6); Army, state and personnel management (Chapter 7); company training, and universities and schools (Chapter 8).

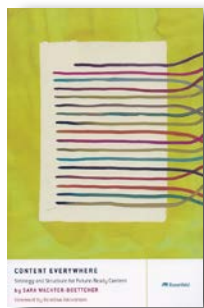
I found *How PowerPoint Makes You Stupid* to be surprisingly readable and not as intimidating as you might think for a serious study. One not-obvious audience for this book is anyone wanting to understand how to structure a presentation for use exclusively in continental Europe (Chapter 6). Also worth mentioning in closing is that the book was published first in French 2010, but not available in English until 2012, so it does not include any research from the last couple of years.

David Kowalsky

David Kowalsky is a technical writer in the Seattle area. He received his MA in East Asian studies from Washington University (St. Louis) and a certificate of technical writing and editing from the University of Washington. He is a senior member of STC's Puget Sound chapter.

Content Everywhere: Strategy and Structure for Future-Ready Content

Sara Wachter-Boettcher. 2012. Brooklyn, NY: Rosenfeld Media. [ISBN 978-1-933820-87-3. 224 pages, including index. US\$39.00 (softcover).]



Wachter-Boettcher addresses the contemporary issue of how to make content available not only on the desktop, but also on numerous mobile devices. Her answer lies in structuring the content so as to make it readily adaptable to these various platforms. Content Everywhere: Strategy and Structure

for Future-Ready Content outlines procedures for accomplishing this goal. Wachter-Boettcher's main message is in two parts: (1) we can no longer afford to design content using page models, and (2) we must stop designing content for individual platforms.

Technical communicators will recognize this approach as a logical definition of the document in a document type definition (DTD). From the early development of styles and style sheets to the Department of Defense's Computer-Assisted Logistics System, to DTDs, to DITA, and to content management systems, technical communicators are already working to make that information accessible for many platforms including mobile devices.

For students and those new to technical communication, Wachter-Boettcher's book introduces them to formatting information to fit a variety of purposes. For both groups, she offers contemporary insight into that age-old problem of helping users use the information in the environment that makes it readily accessible to them. However, Wachter-Boettcher presents only a high-level overview of how to structure documents.

She divides her book into four sections: two introductory chapters on content being everywhere, five chapters of modeling, four chapters on adding structure, and two chapters on her proposed new architecture. Along the way, she intersperses interviews with leading experts in content management systems, content strategies, and information architecture.

Key chapters that will interest technical communicators include one that traces the lineage of content management and mentions the role technical

communicators play (chapter 2), markup (chapter 6), and content application program interfaces (APIs) (chapter 7). She also addresses issues of reusable content (chapter 10), what technical communicators may recognize as single sourcing.

Content Everywhere has plenty of screen shots to demonstrate her key points, with some showing before and after revision. Wachter-Boettcher also uses an informal style that is friendly and addresses the reader directly, and she directly addresses the reader and uses a variety of layout devices to keep that interest high.

This book is best for those who have little or no experience dealing with information that should be available on a variety of platforms—including the mobile ones. For someone more experienced, it would serve as a good review or refresher, especially if reviewing a new assignment to improve the availability of the information.

Wachter-Boettcher's focus throughout on the user's experience and how content management can enhance that experience should appeal to all technical communicators. Her main focus that permeates in Content Everywhere is that the content that you work with can be structured to be available on any platform.

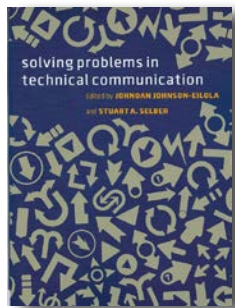
I would recommend Content Everywhere to both those new to content management and those who want to review its contemporary status.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he serves as guest professor at the University of Paderborn, Germany.

Solving Problems in Technical Communication

Johndan Johnson-Eilola and Stuart A. Selber, eds. 2013. Chicago, IL: University of Chicago Press. [ISBN 978-0-226-92407-6. 522 pages, including index. US\$40.00 (softcover).]



Solving Problems in Technical Communication is a wonderful book to be published at a time when technical communication has grown into a shifting and dynamic profession. Edited and written by over 25 experts in the field, the work assembled here will be useful to students, teachers,

and professionals alike. By focusing on real-life examples of technical communication work, the book provides clear instructions and models for how to apply theory and research within a workplace setting.

The book is impeccably organized. Following an educational heuristic for the field, it is divided into four sections: Mapping the Field, Situating the Field, Understanding Field Approaches, and Developing Field Knowledge. Each of these parts contains 4–6 chapters that answer specific heuristic questions; the questions are, in fact, the titles of each chapter. And every chapter is itself a perfect example of a research paper and lesson plan rolled into one, containing a summary, introduction, literature review, heuristic, extended example, conclusion, discussion questions, and works cited.

Part 1: Mapping the Field “includes fundamental questions about what technical communicators do, where they work, and how they progress as both students and professionals” (p. 9). Especially useful in this section are the concrete work samples used as examples to show a clear context for the responsibilities, work patterns, and paths technical communicators take in contemporary organizations.

Part 2: Situating the Field answers questions about how rhetoric theory informs practice, how work tools shape and organize technical communication, and what the history and future of technical communication can teach us. This part provides helpful theories that technical communicators can use when thinking about, planning, and doing effective work.

Part 3: Understanding Field Approaches examines approaches that technical communicators use to conduct research, plan, evaluate, assess, and manage projects. Applications of technical communication via methodological procedures are described in detail with real-world examples, such as ethics and legal issues, advocating for users, studying work contexts, evaluating usability, and managing projects.

Part 4: Developing Field Knowledge “distinguishes technical communicators from ... other types of writers” by explaining what technical communicators need to know about genre, writing, information design, new media, collaboration, and international environments (p. 11). This section shows how much technical communication has expanded beyond words and written texts and beyond software manuals and documentation.

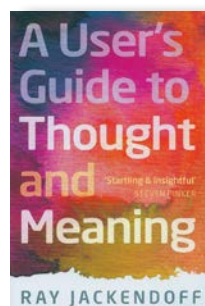
Solving Problems in Technical Communication is well timed, well written, and indispensable. It covers the breadth and depth of the field, and inspires readers to learn more. It will become essential reading for anyone interested in or already working in technical communication.

Liz Pohland

Liz Pohland is an STC Senior Member, Editor of *Intercom* magazine, and the director of publications and content strategy for STC. She is pursuing her PhD at Texas Tech University's technical communication and rhetoric program. Her research interests include museum studies, new media, and digital humanities.

A User's Guide to Thought and Meaning

Ray Jackendoff. 2012. Oxford, NY: Oxford University Press. [ISBN 978-0-19-969320-7. 274 page, including index. US\$29.95.]



Steven Pinker calls Ray Jackendoff “a monumental scholar in linguistics” (back dust cover). Jackendoff has written many books on language, cognition, and consciousness. Here he presents *A User's Guide to Thought and Meaning* for a lay audience, while the same material in the form of a

scholarly treatise would require 1,000 pages.

The heart of Jackendoff's argument is that thought and meaning are almost completely unconscious. We are aware of pronunciations, sentences, visual surfaces, and a small set of feelings that arise from unconscious processes. The feelings, called character tags, tell us, for example, that a certain sound or visual surface is meaningful, significant, good, taboo, based on sensory input, and so forth. If you say “thit,” I'm aware that you said something meaningless, but the mental processes that produce that awareness are as unavailable as those that tell me when to breathe (p. 41).

Jackendoff presents dozens of small examples that refute many widely held ideas and lead him to conclude that meaning is unconscious. Reading them is enlightening and delightful. They often contrast the ordinary perspective, which is natural, but can lead to paradoxes (there's no such thing as sunsets), with the cognitive perspective, which always asks, “How does the brain do that?”

Jackendoff thinks communication is why language developed, with rational thinking as a side benefit. Rational thinking is important, but it isn't what most of us think it is. As Lewis Carroll pointed out in *What the Tortoise Said to Achilles*, every syllogism relies on a hidden syllogism in an infinite regress. We rely on an unconsciously generated character tag to tell us whether the syllogism is correct.

In *Thinking Fast and Slow* (Farrar, Straus and Giroux, 2011), Daniel Kahneman popularizes System 1, the fast, intuitive mode of thought, and System 2, the slow, rational mode of thought. Jackendoff says these correspond to his ideas of unconscious and conscious thought and that they are not separate. System 2 sits atop System 1 and uses its capabilities.

Jackendoff speculates on the structures that support our unconscious thinking. Besides meanings linked into conceptual structures and spatial maps, every entity that we deal with in the long or short term has a reference file, which holds everything we know about it. Rational (conscious) thinking enables us to create reference files for thoughts, so we can manipulate and explore them without losing track of them. This distinguishes us from chimpanzees.

All this has implications for teaching, learning, or becoming a virtuoso of art or science. Jackendoff illustrates this by telling how his chamber group spent 15 minutes deciding how to play the first six seconds of the Brahms Clarinet Quintet.

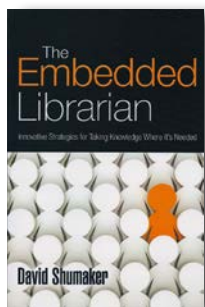
Jackendoff is concerned with the social consequences of his theory. He tries to show that the arts matter as much as science, and he addresses the phenomena of confirmation bias and denial. The book is densely packed with insights and ideas, which are well worth the effort of grasping them.

Richard Mateosian

Richard Mateosian is an independent technical writer in Berkeley, CA, specializing in documentation for programmers. He has written the Micro Review column in *IEEE Micro* since 1987. He is an STC Fellow and has volunteered in many capacities for STC.

The Embedded Librarian: Innovative Strategies for Taking Knowledge Where It's Needed

David Shumaker. 2012. Medford, NJ: Information Today, Inc.. [ISBN 978-1-57387-452-6. 214 pages, including index. US\$49.50 (softcover).]



When in school, you probably consulted a reference librarian when a Web search was inconclusive, your friends could not supply the needed information, or the teacher used your confusion as a teaching moment. You found that librarian sitting at a desk waiting for questions. Such, according to

Shumaker, was the model for reference librarians for the past 200 years.

Fast-forward to today, and when you need information and the Web is once again inconclusive, your colleagues do not know the answers you need, and the manager also does not know what you're looking for, where do you turn? David Schumacher, in his *The Embedded Librarian: Innovative Strategies for Taking Knowledge Where It's Needed*, suggests in his subtitle a new model for reference librarians. The model adds a research librarian to your team along with the others: engineers, marketing specialists, and financial planners. So, instead of a librarian now participates in team decisions instead of waiting passively to respond to questions.

No doubt proposing an embedded librarian would be a hard sell, especially when companies are closing their libraries. More difficult is showing how embedded librarians add to a return on investment and can be a profit center, not a cost center, or, even revenue neutral. Schumacher's book offers no easy answer, especially because the economic climate is constantly shifting. What it does answer are questions about what embedded librarians are and what they do.

His case studies give some insight into what such a proposal could contain. Ultimately, it comes down to demonstrating need and justifying cost.

Part one explains the history and development of an embedded librarian system and offers case studies from academic, nonprofit, for profit, and government organizations. Part two focuses on the person who would want to become an embedded librarian,

beginning with an assessment of the candidate's readiness with several questionnaires and interpretive text. Chapter 7 includes suggestions for evaluating an organization's readiness to accept an embedded librarian. Chapter 8 shows how to become an embedded library and the last chapter offers insights into how the embedded librarian can evaluate him or herself.

The value of part two for the technical communicator who contemplates proposing an embedded librarian is that it shows the qualifications needed to be successful for not only the librarian, but also the organization. Once you present the justification and budget, knowing what kind of person would be a valuable addition to the team can strengthen the argument.

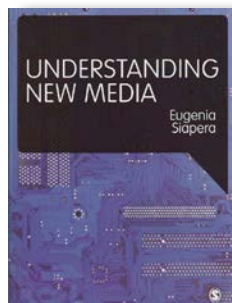
While it may seem unusual to include a review of a book targeted to librarians in this journal, it is not too far of a reach. Improving the quality of the information that a team uses is certainly within the purview of a technical communicator, because both groups have a mutual interest in quality information delivered in a timely way to those who need it.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he serves as guest professor at the University of Paderborn, Germany.

Understanding New Media

Eugenia Siapera. 2012. Thousand Oaks, CA: SAGE Publications. [ISBN 978-1-84860-779-8. 280 pages, including index. US\$39.95 (softcover).]



This book introduces college students to the nature of new media, defined as the “convergence between the computational logic characteristic of the computers and the communicative logic characteristic of the media” (p. 5). It synthesizes representative scholarship clearly and concisely to

establish the theoretical framework of the argument, then proceeds with an insightful analysis of the major changes engendered by new media, with particular emphasis on the transformation of self and society.

These changes include the shift from industrial to informational capitalism, or from centralized, material production to networked, immaterial production; the decentralization of media control, where readers become reporters and vice-versa; the emergence of consumers as “producers” actively co-creating commodities with traditional suppliers; the “blurring of boundaries between work and leisure” (p. 168), visible not only in adult professional and personal life, but also in online games that instill players “with cognitive abilities and skills that serve informational capitalism” (p. 219); the expansion of surveillance “in which people are themselves turned into watchers” of each other (p. 109); and the replacement of the geographically defined nation–state with a virtual network of decentralized, “ad hoc joint ventures” and transient socio-political associations (p. 42).

New media empowers individuals with greater freedom to define their identities, yet dislodges them from a stable, predictable frame of socio-cultural reference. It promotes collaboration among newly defined individuals, appearing to enable the formation of group identity, yet simultaneously prompts those same individuals to transform their identities anew. This self-canceling process undermines the persistent identification with others that authenticates relationships and stabilizes the self.

The variable new self is now experienced as a “space of flows” (p. 15) where time “can no longer be divided, measured and compartmentalized into specific slots”

(p. 127), but is replaced with a “timeless time” that redefines the person “as an autonomous communication node” (pp. 127, 199). The existential self disappears into a virtual, protean world of infinite replication and revision that renders the relevance of ethnic, cultural, or statist (territorialist) identity arbitrary.

For the technical communicator, the issue of informational instability crystallizes in the vulnerability of intellectual property to piracy, especially as legal compliance disappears with the dissolution of the nation–state charged with enforcement. Siapera foresees a Habermasian model of deliberative democracy as the likely best governance model for resolving such issues, because “all stakeholders are represented,” all are “included in the decision-making process,” and all are required to advance “rational arguments until a consensual decision is made” (pp. 244–245). For now, technical barriers to replication may be the technical communicator’s best defense against intellectual theft.

Though well-organized for classroom use, *Understanding New Media*’s main font is too small to read comfortably, the margins are too big, and the “E-tivities” (student exercise) sections are barely readable in faint gray text. Correcting these problems would ensure wider classroom adoption of an otherwise balanced, well-researched introduction to the new media.

Donald R. Riccomini

Donald R. Riccomini is a member of STC and a lecturer in English at Santa Clara University, where he specializes in teaching engineering and technical communications. He previously spent twenty-three years in high technology as a technical writer, engineer, and manager in semiconductors, instrumentation, and server development.

Cultural Technologies: The Shaping of Culture in Media and Society

Göran Bolin, ed. 2012. New York, NY: Routledge. [ISBN: 978-0-415-89311-4, 210 pages, including index. US \$135.00.]



You might be hard-pressed to find someone who does not have a comment or concern about how technology affects our lives, most especially our future. In a world where speculation abounds about this very topic, *Cultural Technologies: The Shaping of Culture in Media and Society* offers

research-based and insightful “analyses of technological phenomena as well as epistemological discussions on the uses of technology” (p. 10).

The articles that comprise this anthology span the histories of particular technologies, the relationship between technology and knowledge, and lastly, the uses of technologies in cultural contexts. Many of the chapters are a good example of mixing functional and critical literacy, such as “The algorithmic turn,” a chapter that discusses how Photosynth (Photosynth.net) works, as well as how an algorithm can act as an author. Other chapters offer unique perspectives on technologies like how Web 2.0, most especially blogs and social networking sites, can be considered technologies that foster self care. This concept of self care or “technologies of the self” implies that some technologies can and are used for the purpose of transforming the self, of attaining a state of happiness in one way or another. This idea self flies in the face of more popular beliefs surrounding the egotistical aspects of Web 2.0, such as how social networking feeds generations of individuals who believe themselves entitled and who seek any form of attention they can get. Likewise, historical chapters frame present day use with lenses that lead to critical reflection on the evolution of certain technologies that we may sometimes take for granted, such as CDs, digital audio files, and peer-to-peer file sharing.

The collection of articles in *Cultural Technologies* has breadth and leaves room for ample discussion on cultural perspectives and more pragmatic matters concerning hardware and software technologies. For American audiences, the diverse international authorship

is refreshing and broadens discussions on culture, technology, and globalization.

Diane Martinez

Diane Martinez is an assistant professor of professional and technical communication at Western Carolina University. She previously worked as a technical writer in engineering, an online writing instructor, and an online writing center specialist. She has been with STC since 2005.

How to Not Write Bad: The Most Common Writing Problems and the Best Ways to Avoid Them

Ben Yagoda. 2013. New York, NY: Riverhead Books. [ISBN 978-1-59448-848-1. 178 pages. US\$15.00 (softcover).]



Ben Yagoda teaches journalism at the University of Delaware. His aim in *How to Not Write Bad* is to help writers write not badly. Yagoda is a premier wordsmith, as he shows throughout the book, and he would probably re-write the previous sentence so that I didn't repeat the word “write.”

His audience for the book is students, high school and college teachers, and “everyone who wants to improve his or her prose” (p. 3). I would assume the latter would include most STC members, and would particularly interest those of us who also teach, whether full-time or part-time. One thing I was looking for in this book was confirmation of what I'm seeing in my students and in writing in general. And, what he writes in this book confirms it.

The single most important thing I got out of this book is the importance of reading for writing. I've been preaching this sermon for several years to my students. Yagoda writes, “By osmosis, they [good writers] learn from the reading an incalculable amount about vocabulary, spelling, punctuation, style, rhythm, tone, and other crucial writing matters” (p. 15). He confirms what I always tell students about research: “Your writing will improve in direct proportion to the amount you read” (p. 20). I could substitute the word “grade” for “writing” in that sentence and it would still be true.

Yagoda urges what he calls “mindfulness” in writing. That means that you pay attention to nothing else when you’re writing. What does he exclude? Multi-tasking. That means that I cannot listen to classical music while writing this review and or a Cubs game while I’m grading papers. And, those are mild compared to what many students are doing today while they’re doing their homework.

We always discuss the importance of spell-checking in my writing class, and I’ve even been dinged on that at work. Yet, while it may not be possible to proofread a 1,000-page report at work, I do expect my students to proofread a five-page essay. Hear what Yagoda has to say: “Spell-check, in many ways a wonderful innovation, has caused spelling muscles—never robust to begin with—to atrophy to the point that they now have the firmness of mint jelly” (p. 61). Spell-checking has inspired a false sense of confidence, when we should be living with a dictionary at arm’s reach at all times.

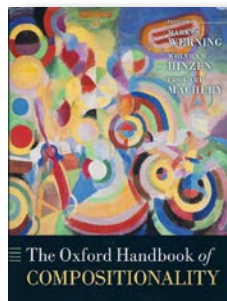
While I love *How to Not Write Bad*, I do wish Yagoda had documented the source of some of his wonderful quotes. The paper is cheap and the book has an abrupt ending. And, while the parallelism of the last sentence in his book is rough, it sums up his program nicely: “If you turn off the music, you’re mindful, and you read, read, read, you can do it” (p. 172).

Charles R. Crawley

Charles R. Crawley is a long-time STC member and adjunct professor of English and business at Mount Mercy University in Cedar Rapids, Iowa.

The Oxford Handbook of Compositionality

Markus Werning, Wolfram Hinzen and Edouard Machery, eds. 2012. New York, NY: Oxford University Press. [ISBN: 978-0-19-954107-2. 746 pages, including index. US\$150.00.]



This weighty tome is a compendium of scholarly articles on compositionality, a notion “first introduced as a constraint on the relation between the syntax and the semantics of languages” (p. 1). Originally the domain of logic, psychology and linguistics, the principle of

compositionality over the last two centuries has been applied to an expanding range of disciplines as diverse as neuroscience and computer programming. By including chapters representing these various disciplines in *The Oxford Handbook of Compositionality*, editors Markus Werning, Wolfram Hinzen and Edouard Machery hope to find “an audience in the broader cognitive science community, including philosophy, linguistics, psychology, neuroscience, computer science, modelling, and logic” (p. 2).

The principle of compositionality, most often attributed to Gottlob Frege, is commonly stated as: “The meaning of a compound expression is a function of the meanings of its parts and of the way they are syntactically combined” (p. 19). This concept has spawned “myriad controversies in regards to its scope, formulation, and psychological reality” (p. 1). Similarly, the statement of the principle is open for interpretation. For example, do the parts have meaning within themselves or only when taken together? Contextualism, judging the meaning of an expression through its context, also possibly attributed to Frege, continues to be the main opposing principle espoused by scholars. Each of the more than 40 contributors to *The Oxford Handbook of Compositionality* has been invited to weigh in on “almost every major aspect of these controversies” (p. 2). Thus the handbook provides not only a sampling of points of view among the disciplines adhering to the principle of compositionality, but also a cross-section of thought and opinion on the merits of the principle itself.

Authors of the handbook’s 32 chapters represent academic institutions from around the globe. Articles are labeled clearly so readers may choose those that

most interest them. Many chapters offer a conclusion or summary paragraph, another aid in determining relevance to the reader. The chapters are organized into seven sections: History and Overview; Compositionality in Language; Compositionality in Formal Semantics; Lexical Decomposition; The Compositionality of Mind; Evolutionary and Communicative Success; and Neural Models of Compositional Representation. They are followed by an extensive list of references.

Because compositionality is “often regarded as a virtually defining feature for the discipline of formal semantics” (p. 1), *The Oxford Handbook of Compositionality* is of special interest to technical communicators whose field of study is linguistics and who would like to have a survey of current thinking on compositionality, either for their own use or for the classroom.

Linda M. Davis

Linda M. Davis is an independent communications practitioner in the Los Angeles area. She holds an MA in communication management and has specialized in strategic communication planning, publication management, writing, and editing for more than 25 years. Linda is active in the STC Los Angeles chapter.

Internet Research Skills

Niall Ó Dochartaigh. 2012. 3rd ed. Thousand Oaks, CA: Sage Publications. [ISBN 978-0-85702-529-6. 200 pages, including index. US\$43.00 (softcover).]



We often do Internet research haphazardly. The most common mistake is always relying on the same search engine to blindly seek “everything” on any given topic.

Niall Ó Dochartaigh encourages us to take a more reasoned approach. With attempts to catalog the Internet long dead,

he says, we must turn to sophisticated keyword search and specialized subject guides. He advises, “In this new environment, the most important research skills relate to channelling, evaluating, selecting and restricting information rather than the simple assembling of large quantities of related information” (p. 2).

He addresses serious researchers who need to improve their efficiency as they regularly seek the best

sources in their disciplines and network with other experts. Seven main chapters provide guidelines and expert hints on using databases to locate academic articles and books, harnessing the “open Web” to mine the information on your personal subjects of interest, using advanced tricks to take full advantage of Yahoo! and other keyword search engines, using new interactive services to create new ways of understanding data, unlocking seemingly hidden government information, and evaluating online sources.

Each chapter provides a surprising amount of advice through screenshots and boxed strategies, tips, technical definitions, and examples. (A list summarizes the content of each box.) Challenging end-of-chapter questions require you to use material relevant to your work.

I pride myself on my research skills, but Ó Dochartaigh has prompted me to adopt smarter practices. He offers many methods that I didn’t know and many that I did know, and should use. Here are a few examples:

- Explore major sources in your field to establish context before turning to general search engines.
- Search engines often read only home pages, so mine the subpages of a site.
- Combine resources where possible. For example, use Google Scholar along with structured full-text databases to get a surprising number of articles.
- Learn the often hidden switches that make online resources more powerful. For example, enter the ISBN of a book into Wikipedia’s “Book sources” page to see masses of detail related to that book.
- Use the best tools for certain types of searches. Thus, when searching blogs, use perhaps Technorati.com.
- Don’t overload a Google query: Google uses only the first 10 words.
- When using Amazon’s “Look Inside” feature, use both Amazon.com and Amazon.co.uk.
- Use Google Books or Amazon search to supplement the indexing of a book you already own.

The book is a bit uneven in coverage. Ó Dochartaigh is brilliant on structured databases, archives, and search engines. However, he offers less on new research networks and online surveys.

Be aware that his primary focus is the humanities and social sciences, not science and technology. Even

so, use his methods, and you can easily adopt his suggestions to your own research.

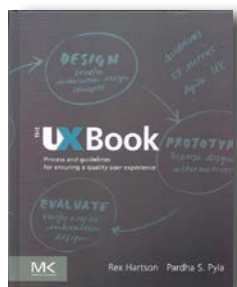
Sage Publications titles have long won praise for accuracy and strong methodology. Internet Research Skills further solidifies that reputation.

Avon J. Murphy

Avon J. Murphy is a technical editor in western Washington. A retired college professor and government writer, he is an STC Fellow, a contractor, and principal in Murphy Editing and Writing Services, specializing in computer and Web technologies. Avon served as book review editor for Technical Communication for 17 years.

The UX Book: Process and Guidelines for Ensuring a Quality User Experience

Rex Hartson and Pardha S. Pyla. 2012. Waltham, MA: Elsevier/Morgan Kaufmann. [ISBN: 978-0-12-385241-0. 938 pages, including index. US\$89.95.]



In this excellent new book, Rex Hartson and Pardha Pyla bring UX (user experience—the broad view of what started out as usability and usability testing) up to date. Just as the STC special interest group has changed its name from Usability to Usability

and User Experience, Hartson and Pyla realize that we have moved from “make this easy to use” to “let’s understand the users’ world and find a way to make it better for them.” Their view of UX includes the traditional attributes of usability: effectiveness, efficiency, and satisfaction. It also includes newer views that expand UX to social and cultural interaction, value-sensitive design, and emotional impact (joy, fun, aesthetics).

The UX Book is a worthy successor to the pioneering book on usability and user interface design that Hartson wrote with Deborah Hix in 1993. Hartson’s new co-author, Pardha Pyla, brings up-to-date experience as Senior User Experience Specialist and Lead Interaction Designer for Mobile Platforms at Bloomberg.

In *The UX Book*, Hartson and Pyla take us through what they call “the Wheel,” (p. xii) a very logical iterative process for user-experience design (analyze, design, prototype, evaluate). They expand each element of their Wheel through several chapters of practical explanation and examples.

After more than 600 pages on the process, Hartson and Pyla add more value with chapters on special topics such as agile development and a long chapter on guidelines. They preface the guidelines with a discussion of cognitive science principles. The authors present each guideline with explanations and examples, as well as remind readers that context always matters. Stating guidelines is easy. Knowing when and how to apply them in a particular context is not always easy. The UX Design Guidelines chapter with its more than 100 pages could have been an excellent book in itself.

Hartson and Pyla have achieved a remarkable synthesis of textbook and trade book. The UX Book is extremely practical, written in a conversational style, with a running case study, and many pictures and examples. It is also deeply grounded in theory and research. Descriptions of relevant research with citations lead to 23 pages of references. These research descriptions and references add credibility and value to the very practical process the book teaches.

For instructors or for self-study, *The UX Book* includes exercises that are called out briefly in context and described in detail at the back of the book. A companion Web site offers more help to instructors.

This comprehensive book brings together and updates so many of the books that have been part of any UX practitioner’s library that it could be the one book you now need to understand and practice UX design. Despite the book’s length, a detailed table of contents and a 32-page index make specific topics easy to find.

Janice (Ginny) Redish

Janice (Ginny) Redish is President of Redish & Associates in Bethesda, Maryland. Ginny is an STC Fellow and former member of STC’s Board of Directors. Her latest book, *Letting Go of the Words – Writing Web Content that Works*, (2nd edition, Morgan Kaufmann/Elsevier, 2012) gets rave reviews at book sites and in blogs.

The Phaidon Archive of Graphic Design

Editors of Phaidon. 2012. London, England: Phaidon. [ISBN 978-0-7148-4867-9. 1000 pages. US\$235.00.]



In many respects, The Phaidon Archive of Graphic Design is impressive. In the first place, it is big and definitely heavy. It is a book-in-a-box that comes with its own carrying harness made

from nylon webbing. Potential readers should note that the size and weight of this box discourages any real notion of portability. All that weight comes from the 500 cards inside which measure 9.5" wide by 12.5" tall. The pages themselves are plain white matte cardstock, so each one feels about like a poster. Each card features a large, usually color, image on the front and two or three smaller images, also usually color, on the back with a small block of text. This page size allows for large images and a good amount of detail.

The content is equally impressive. The set is divided into 15 categories ranging from Book Design and Typography, to Posters and Film Graphics. Sitting down with this box is like sitting down with a bag of potato chips. It's hard to eat just one. The text included for each example is quick and engaging. Readers will find themselves, as I did, reading card after card and thinking, "That's really interesting!" after each one.

The scope of this collection is both impressive and disappointing: Impressive because the editors have managed to distill the history of graphic design into 500 cards and disappointing because the entire history of graphic design is represented in only 500 cards. Granted, these are all great examples and are definitely high points in the evolution of the field, but it seems a shame to have limited thousands of years of history to only 500 examples. Of course, this is the normal quibble for a book such as this one that tries to be as comprehensive as possible given the page limitation. Lots of great graphic design work will be left out. Readers should perhaps come to this collection prepared to enjoy and be inspired by the examples, included rather than lamenting the work that has been left out.

The limitation of the content is not what will keep readers away from this set, though. What I think will keep many readers from having this set in their personal

graphic design library is the cost. It is unfortunate because despite the limitation of scope common to all graphic design history books, this is a great collection. Its presentation is unique and the big images make possible the close examination of minute details. While the price tag might prevent this from becoming part of a personal library, it would be a wonderful addition to a local public or university library if it isn't there already.

Spencer Gee

Spencer Gee holds a master's degree in composition and rhetoric and teaches Freshman Composition at the University of Central Oklahoma. He also is working toward a degree in graphic design.

Designing for Social Change: Strategies for Community-based Graphic Design

Andrew Shea. 2012. New York, NY: Princeton Architectural Press. [ISBN 978-1-61689-047-6. 167 pages, including index. US\$24.95 (softcover).]



Andrew Shea's *Designing for Social Change: Strategies for Community-based Graphic Design* highlights 10 specific strategies for assistance in the development of community-based graphic design projects. The book follows a very precise format where each chapter defines one of

the strategies, each of which are conveniently listed on the book's front cover, and then shows two examples of community-based projects with the strategy in action (20 in all). The book's layout is easy to follow with text blocks in each example that identify the specifics that were unique to each project: Project Details, Design Challenge, Engagement Strategy, Design Strategy, Outcomes, and Lessons Learned. These callouts make it easy to identify the main components of each featured community-based project example. Each example is also accompanied with excellent images of the designer's solution to the design problem and, in some cases, the images of alternate works that were selected for final use instead of the highlighted designer's solution. All these things help to provide the reader with sound insight on community-based design.

The book is a result of Shea's work he did while studying for his Master's in Fine Arts (MFA) in Design at the Maryland Institute College of Art (MICA) and is an expansion of the thesis project that he did while there. *Designing for Social Change* is intended to be a guide for anyone who is considering taking on non-profit work, whether they are new to designing for social change or have done non-profit work before, which is an area of growing interest.

Each example that follows one of the listed strategies shows great ways that designers have become involved with their community to improve something that they were aware of in their own community that needed to be addressed and the design solution that they used to solve the issue. While not all the solutions were successful, it was refreshing that Shea included the solutions that didn't quite meet the needs of the organizations or communities that they were working for.

The final segment of *Designing for Social Change* addresses funding for social design, which can be one of the biggest issues for designers working in this field. In fact, some of the solutions that were developed in this book were never realized due to lack of funding. This segment offers advice and resources on how to get funding through grants and granting writing, as well as doing social design as pro bono work.

Amanda Horton

Amanda Horton holds an MFA in design and currently teaches graduate and undergraduate courses at the University of Central Oklahoma in the areas of design technology, design studio and history of graphic design. She serves as a book reviewer for *Technical Communication*.

Communicating Clearly about Science and Medicine: Making Data Presentations as Simple as Possible ... but No Simpler

John Clare. 2012. Surrey, England: Gower Publishing Company. [ISBN 978-1-4094-4037-6. 186 pages, including index. US\$54.95 (softcover).]



Communicating Clearly about Science and Medicine: Making Data Presentations as Simple as Possible ... but No Simpler is a guide meant for physicians, scientists, and academics who must discuss health information, clinical trials, or science to a wide range of audiences. In this book,

Clare focuses on three communication types: peer-to-peer communication, communication to non-experts, and media interviews.

The information contained in this book is the same basic information about presenting technical material found in any technical communication textbook. Some topics covered are presenting effective PowerPoint slides, formatting clear and readable visuals, presentation style, and planning a technical presentation. Clare, however, uses real life examples from science and medicine to illustrate his points.

While the examples undoubtedly serve as useful templates for physicians and scientists who are not familiar with giving presentations, there are so many textual and visual examples that they become overwhelming. The overabundance of block quotations and visuals resulted in my losing sight of the goal of the section that I was reading. Further, in Chapter 4, *Illustrating Your Talk*, Clare often discusses the colors of the PowerPoint slides in the examples. It was difficult to visualize what he was discussing since *Communicating Clearly about Science and Medicine* is not printed in color.

Clare does offer helpful advice for novice and seasoned health communicators. Chapter 3, *Preparing Your Talk*, covers some of the most valuable information on advanced techniques for planning a technical presentation (the grid system for preparing a presentation), helpful advice about tailoring the information for the audience by anticipating their attitudes and objections, and information about focusing on the audience's current level of understanding

about the subject while planning the talk. Chapter 7, *Media Interview Techniques*, is vital because most texts that cover scientific and medical communication do not offer information about dealing with the media. The points that are especially illuminating in this chapter included information about communicating with a general audience, giving a memorable interview, and strategies to ensure that you communicate clearly so that the journalist does not misunderstand or misquote you.

Communicating Clearly about Science and Medicine is a helpful guide about giving presentations and interviews for physicians, scientists, and academics. Clare offers specific advice with helpful examples that are situated within the field of medicine. While the book is geared toward novice presenters, experienced professionals will find useful information for improving their presentation skills.

Nicole St. Germaine

Nicole St. Germaine is an assistant professor in the technical and business writing program at Angelo State University, as well as a freelance writer and consultant. Her research interests include technical communication for a Mexican-American audience and technical communication in the health fields.

Visual Strategies: A Practical Guide to Graphics for Scientists & Engineers

Felice C. Frankel and Angela H. DePace. 2012. New Haven, NY: Yale University Press. [ISBN 978-0-3001-7644-5. 154 pages, including index. US\$35.00 (spiral).]



Visual Strategies: A Practical Guide to Graphics for Scientists & Engineers offers a practical guide to increasing the effectiveness of visual representation in the sciences and engineering. Using examples encountered in their own work, Frankel and DePace, in

collaboration with graphic designers Stefan Sagmeister and CHIPS, produce a book with the same look and feel as its accompanying Web site, to encourage a fruitful dialogue between the two media.

This hybridization of information allows for updating of examples and collaboration by visitors to

the Web site based on five fundamental graphical tools identified as key to producing effective visuals. These tools are presented as a grid for measuring changes made to “before” and “after” versions of an image (shown on facing pages) improved by applying some or all of the tools. Grey dots by each graphical tool grid indicate no change to the original; orange dots represent tools “used to improve the figure” (p. 11). *Visual Strategies* is purposely designed to “show by example” (p. 10).

The grid tools refer to ways of altering the graphic’s composition, degree of abstraction, color, layering (superimposing images upon each other to highlight differences within one visual field), and refinement (adding or subtracting meta-elements, such as labels, arrows, call-outs). The graphical grid includes the authors’ comments on the effectiveness of each criterion and offers the rationale for introducing a change.

The overview section of the text explains the tools themselves with examples. The tool grid is situated within a broader context of four basic questions: who is the audience, how will the image be used, what is the goal in displaying the image, and what is the challenge in making the image effective. The authors offer analysis and suggestions of how sample graphics might be evaluated with these questions, and then present the original and revised images with the explanatory tool grid.

Further examples from science and engineering are grouped by the graphic’s purpose (form and structure, process and time, compare and contrast). These analyses are of finished images that could have been further improved. Case studies—written by contributors from the physical sciences, engineering, and computer science—explain how their images evolved from rough sketches into effective graphics. A final chapter similarly includes various authors explaining how they developed their interactive graphics (with the animations accessible on the book’s Web site).

The recurrent focus on four fundamental questions and five basic tools provides a consistent, analytical frame of reference while allowing scientists freedom to make their own design choices. The text does indeed “show” rather than “tell” how to create more effective graphics. *Visual Strategies* itself embodies this practical approach: tabbed, color-coded sections enable usability and the unusual vinyl cover allows pages to lie flat and

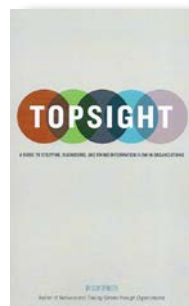
protects against moisture in the lab or field. This book is recommended for readers comfortable with emulating model practitioners and “learning by doing.”

Donald R. Riccomini

Donald R. Riccomini is a member of STC and a lecturer in English at Santa Clara University, where he specializes in teaching engineering and technical communications. He previously spent twenty-three years in high technology as a technical writer, engineer, and manager in semiconductors, instrumentation, and server development.

Topsight: A Guide to Studying, Diagnosing, and Fixing Information Flow in Organizations

Clay Spinuzzi. 2013. Austin, TX: CreateSpace. [ISBN 978-1-4819-6006-9. 302 pages. US\$24.99 (softcover).]



Clay Spinuzzi's self-published *Topsight: A Guide to Studying, Diagnosing, and Fixing Information Flow in Organizations* is written for working writers, technical communicators, workplace researchers, startup entrepreneurs, or team managers interested in how and why information flows—or not—in

their organization. This book's goal is to help readers obtain an “understanding of the big picture,” (p. iv) in their current working or research context by using valid, reliable, and consistent research methods.

Spinuzzi achieves his goal with ease through accessible writing, scaffolding of skills and best practices, and supporting claims and practices with multiple examples. Chapter 2: Developing a Research Design is arguably the book's most important chapter as it provides an overview of research methods, approach, intention, and data collection. This chapter and several others could be easily excerpted for research courses. The book builds on this foundation with multiple chapters on preparing, executing, and analyzing research in the field. Concrete examples enrich these chapters. Anecdotes explicate Spinuzzi's points—particularly in chapter 3, how to protect yourself as a researcher, and in chapter 4, where the author's experience in

getting permission to conduct research could benefit new researchers. Besides anecdotes, Spinuzzi provides substantive sample interview questions, consent forms, and research design. These resources offer a model for new researchers who must submit their research proposals for work with human subjects to an Institutional Review Board. For research instructors, *Topsight* is rich foundational text that provides multiple sample documents. The book is a powerful research training tool with a conceptual API that should work with almost any basic research course.

Topsight has three small, yet notable shortfalls. First, while Spinuzzi references few theorists and jargon is virtually absent from the text, Actor Network Theory (ANT) appears in Chapter 20. This is no surprise given the author's prior work with *Network and Tracing Genres through Organizations*. However, Spinuzzi slips and writes assuming the reader knows more about ANT than most new researchers would. Second, each chapter ends with useful exercises that center on group work and do not fully address the solo researcher's needs. Finally, during my review, I experience difficulty viewing the book's illustrations on two different Kindle models, which might limit the audience's takeaways. [Editor's Note: The illustrations in the printed volume are black-and-white with a moderate difficulty in reading them based on the book's size.]

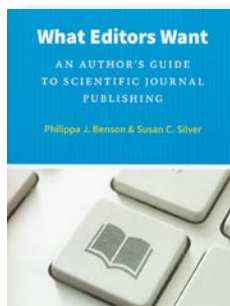
Technical communicators work in diverse environments, from Web start-ups to engineering departments. Spinuzzi's *Topsight* offers a potential research lingua franca to technical communicators working with professionals, practitioners, students, or academics who are not familiar with technical communication and its research practices or terminology. This book is a gracious ambassadorial bridge between technical communication and others because it exemplifies the STC values.

Gregory Zobel

Gregory Zobel is an assistant professor of educational technology at Western Oregon University. Trained in technical communication, usability, and rhetoric, he supports and trains educators employing technology to enhance and enrich learner engagement, accessibility, and content delivery in person and online.

What Editors Want: An Author's Guide to Scientific Journal Publishing

Philippa J. Benson and Susan C. Silver. 2013. Chicago, IL: University of Chicago Press. [ISBN 978-0-226-04314-2. 178 pages, including index. US\$20.00 (softcover).]



What Editors Want: An Author's Guide to Scientific Journal Publishing is based on workshops the authors have given in China. It provides a thorough explanation of the basic workings of science publishing and gives the readers a perspective on not only what requirements they may encounter

in trying to publish, but why those requirements are in place. The readers also receive good suggestions on how to meet those requirements.

The authors address topics that include fundamental concerns such as choosing the right journal in which to submit, authorship issues, and how to write a worthwhile cover letter. Some other topics include the impact factors of journals, preparing for manuscript submission (subtitled "What Editors wish you knew"), an overview of the peer review process, and ways to deal with the variety of journal decisions one might receive after submitting an article. The book's appendices include a listing of resources for authors (including academic and government Web sites and lists of style manuals and writing textbooks) and a pre-submission checklist.

Benson and Silver wrote *What Editors Want* in second person, directly addressing their readers as "you." This choice allowed them to write simply and makes reading their text quite easy. A variety of sidebars, written by experts, amplifies the text and adds perspective. These are set in italic to distinguish them from the main text, but they use the same page margins and only dotted rules at the top and bottom. I forgot several times I was reading a sidebar when it extended to several pages.

This book would be ideal for new authors in science or those unfamiliar with writing and publishing on scientific subjects. In truth, many researchers beyond their student years might benefit from some of the insights provided about publishing their articles—particularly in the chapters about choosing a journal to submit to and preparing for manuscript submission—but they are likely to find the pace of the book too

deliberate. While *What Editors Want* is not pitched to those established researchers, it is an excellent treatment for those new to publishing their research in scientific journals.

David E. Nadziejka

David E. Nadziejka is the biomedical editor at Van Andel Research Institute in Grand Rapids, MI, and an STC fellow. He has been a science and engineering editor for over 25 years and has taught technical communication courses at the Institute of Paper Chemistry, Argonne National Laboratory, and Illinois Institute of Technology. His major professional topics of interest are substantive editing and levels of edit.

Rethinking Academic Writing Pedagogy for the European University

Ruth Breeze. 2012. Amsterdam: Rodopi. [ISBN 978-90-420-3520-1. 180 pages. US\$54.00 (softcover).]



"... effective written English is likely to empower our students more than many other intellectual accomplishments" (p. 91). Thus, Breeze sets up her approach to teaching non-native speakers of English (L2) how to write successfully in an academic setting. *Rethinking Academic*

Writing Pedagogy for the European University offers language teachers as well as those who work with L2 individuals an approach to teaching them how to write.

She identifies two types of training in writing: Writing in an academic setting and writing at work. As Breeze's title suggests, her prime concern is with teaching students to write so that they can succeed in the academy. One thing Breeze excludes from academic writing is preparing for the Test of English as a Foreign Language (TOEFL), which requires a different kind of writing in a timed setting.

Breeze groups *Rethinking Academic Writing* into 10 chapters and three parts: chapters 1–5 describe the various approaches and models used by writing teachers of native speakers (L1); chapters 6–8 describe new concepts and trends; and chapters 9–10 offer a summary and draw tentative conclusions with advice on the

principles employed to teach L2 students. Throughout, she makes one point quite clear: you cannot employ the strategies and models used to teach L1 students to write to L2 students. There are too many differences including those associated with the cultural attitudes toward writing and the approaches L2 students are used to before they attend a university.

The problems Breeze notes are centered on instruction in writing that is almost an afterthought to English as a Second Language instruction. She wants to change that model and move that instruction to a more prominent place in the curriculum. Look at any discipline in a European university and you will find considerable instruction being offered in English with the requirement that the students write their class papers, theses, and dissertations in English.

Some key features in *Rethinking Academic Writing* include an historical survey of the research into the evolution of approaches to teaching writing, from imitating models to understanding the process used to create a written document, to a combination with a shift from models to genres.

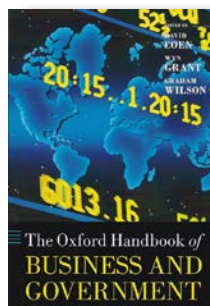
Breeze writes a typical academic book, yet no index is available, making tracking a particular topic almost impossible. Also, she listed several sources and then failed to include them in the bibliography. Finally, the book has numerous typos that should have been noticed before publishing. The book has some value if you are interested in how teaching writing in the US differs from teaching it in European universities, how L2 students differ from L1 students and why methods used with L1 students do not work, and how one would go about teaching writing to L2 students. Technical communicators working with L2 writers can also find *Rethinking Academic Writing* of value in understanding the problems L2 writers face.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he serves as guest professor at the University of Paderborn, Germany.

The Oxford Handbook of Business and Government

David Coen, Wyn Grant, and Graham Wilson. 2010. New York, NY: Oxford University Press. [ISBN 978-0-19-969374-0.788 pages, including index. US\$49.95 (softcover).]



The interaction between business and government has a major effect on how we live our lives every day, which was especially clear during the Great Depression and Financial Crisis of 2008 when large banks collapsed, people lost their savings, and some even lost their homes.

The relationship between business and government is important to technical communicators because writing is a key activity that manages this relationship through writing regulations to collaborating with writers from across the world to create both business and government documents.

Coen, Grant, and Wilson provide a comprehensively edited handbook that discusses and analyzes the relationship between business and government in various settings across the world. The editors include contributions from authors that address specific policy issues that are important because of the relationship. This handbook provides context to issues that affect writing, yet does not explicitly discuss writing. Also, you never read handbooks from cover to cover.

The *Oxford Handbook of Business and Government* is a lengthy and distinct five section read. The first section addresses the business and government relationship from four different disciplines: political science, economics, law, and business studies. The second section discusses how these entities interact in different settings, such as business and political parties or capitalism's effect on business. The third section discusses global viewpoints from the US, Europe, Latin America, and Asia. Section four addresses how governments regulate corporations. Finally, section five focuses on various policy issues that affect businesses including competition policy, training policy, and environmental policy.

This book provides great context on the following issues of interest to technical communication scholars:

- Corporate social responsibility (CSR): Scholars interested in how CSR is communicated would find

Chapter 22 useful as it distinguishes the various types of CSR in different political environments.

- Environmentalism: There is a critical mass of literature in technical communication about environmental policy and environmentalism. Chapter 29 discusses how environmental and food safety policies are regulated by both national and international entities.
- Regulatory writing: Section four addresses how various government entities regulate businesses. Scholars interested in regulatory writings' effect on business would find this section useful.

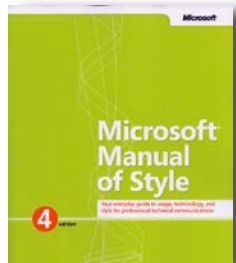
Overall, this handbook should be on the shelves of any academic researching writing or communication that negotiates the relationship between business and government. Furthermore, perhaps the technical communication discipline can add a similar handbook to the discussion.

J.A. Dawson

J.A. Dawson is a PhD student in technical and professional discourse at East Carolina University.

Microsoft Manual of Style: the Everyday Guide to Usage, Technology, and Style for Technical Communications

Microsoft Corporation. 2012. Redmond, WA: Microsoft Press. [ISBN 978-0-7356-4871-5. 438 pages, including index. US\$29.99 (softcover).]



I am an unabashed fan of style guides. I admire the thought and detail that goes into creating one and the challenges inherent in refining the style-vision of the author(s) over time. Depending on where you work and the industry, you might have a choice

of style guides that you can apply to your projects.

If you work on technical topics—from software to applications to Web pages—you'll benefit from having the Microsoft Manual of Style on your office bookshelf. Subtitled "the everyday guide to usage, technology, and style for technical communications," this 435+

page guide is comprehensive and clearly written. And, quite honestly, it appears to cover everything, from acronyms and abbreviations to punctuation, grammar, international concerns, mouse terminology, and the user interface.

The team of Microsoft writers and editors who helped create the guide uses it in their work. In the Foreword, Director of Language Services Suzanne Sowinska describes watching users struggle with new features in software prototypes because "the words on the user interface aren't easy to follow or descriptive enough" (p. xvii). The authors' goal—our collective goal as technical communicators—is to "make the customer experience much better" (p. xvii).

The user interface section takes almost 50 pages and introduces the "first wave" of a new style called natural user interface (NUI) that is found, for example, on smartphones and game consoles. NUI includes speech and gestures besides traditional keyboard interfaces. This section is especially important for technical communicators who work on projects where consistent labeling of the various elements of windows and dialog boxes is critical to user understanding.

In several sections, the authors offer examples of Microsoft style and not Microsoft style (which is not labeled as "wrong"). For example, when documenting a procedure, Microsoft style does not call for a colon or ellipsis to be included in a step even if the dialog box includes that punctuation. This easy-to-follow convention allows for quick comparisons.

Helpful tables are included throughout the guide, from a list of special characters (p. 165) with mostly obvious descriptions to a dozen-page table of acronyms (p. 217) with numerous, specific comments (for example, FTP is not a verb) and a cloud terminology table (p. 112). A 200+ page usage dictionary and a 17-page index are at the end of the guide.

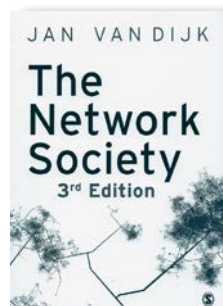
Easy-to-use, well-written and organized, and with a nice lay-flat binding, the Microsoft Manual of Style is a gem.

Ginny Hudak-David

Ginny Hudak-David is the senior associate director in the Office for University Relations at the University of Illinois, the largest public university in Illinois with campuses in Urbana-Champaign, Chicago, and Springfield. She works on a variety of communications projects.

The Network Society

Jan van Dijk. 2012. 3rd ed. Thousand Oaks, CA: Sage Publications. [ISBN 978-1-4462-4896-6. 326 pages, including index. US\$47.00 (softcover).]



During the 20th century, society relied on print, radio, television, and telephone to communicate. And, as author Jan Van Dijk points out in *The Network Society*, the 20th century networks were simple and included roads, telephone wires, and cable television.

However, the 21st century began with a new global communications revolution: the age of electronic networks. We now have Wi-Fi connections, wireless phones, digital television, and computers (desktop, laptop). The new media are entering our private lives. For example, we can now be reached 24 hours a day via e-mail and phone no matter our location. No longer are we conversing over dinner in a restaurant, but it is more common now for each person at the table to have an electronic device.

I find reading Van Dijk's book similar to what a reader in the 1950s must have felt while reading George Orwell's *Nineteen Eighty-Four*. Van Dijk addresses the key areas affected by our electronic revolution: economy, politics, law, social structure, culture, and psychology. *The Network Society* describes the multi-faceted impact of the digital age that we don't think about nor are we told about in our daily lives.

With the need to access data from remote locations, data storage is moving to a more centralized location, the cloud. The cloud consists of central servers that contain our software and stored data. Among the largest companies involved in the cloud are Microsoft, Google, and Amazon. Although this new trend of centralizing data works and may be cost effective for many companies, the possibility arises of personal data being monitored by private companies or companies losing control of their own data.

Three big companies—Microsoft, Apple, and Google—are involved in telephone, computer/internet, and broadcasting netting multi-billion dollar profit. In fact, Google's \$29.3 billion revenue in 2010, for example, was from advertising.

I found the chapter on psychology to be the most profound chapter in *The Network Society*. As a mother

of a teenager, I was struck by the possible impact of the digital age on the psychology of children. "An extremely dark potential consequence of the second-best social personality would be the loss of empathy for fellow humans of flesh and blood" (p. 267). Van Dijk points out that today's young people, while always connected, feel deprived of attention. We need to devote more of our attention without the electronic devices to our children.

As a technical writer who is involved in mobile applications for hand-held electronic devices, I found this book exposes the numbing effect of this electronic network revolution. There is an old story that a frog can slowly be boiled alive if placed in cold water that is slowly heated. It will not perceive the danger and will be cooked to death. The water in the pot is being heated with the electronic networking of our time. Van Dijk provides us with the wake-up call we need.

Rhonda Lunemann

Rhonda Lunemann is a technical writer with Siemens PLM Software, a senior member of STC's Twin Cities Chapter, and a member and officer of the Hill Speakers Toastmasters Club (Club 4415).

Scientific Papers and Presentations

Martha Davis, Kaaron Davis, and Marion Dunagan. 2012. 3rd ed. Boston, MA: Elsevier Inc. [ISBN 978-0-12-384727-0. 342 pages, including index. US\$44.95 (softcover).]



Scientific Papers and Presentations is intentionally written for scientific graduate students, who need assistance with writing and communicating with non-scientists. The book specifically lays out ideal techniques for scientific writing. It is easy to follow and has an excellent table of contents and appendix. The

chapters range from information pertaining to "writing first drafts" to "communication with non-scientists." The authors have put together a book for scientific writing that feels like a step-by-step set of instructions. It is so easy to follow.

The table of contents appears in a format that makes it easy to find and access exactly what a science writer needs. If a student or professional needs to know how

to write a specific scientific paper or presentation, they do not need to dig through the entire book looking for specifics. It is clearly distinguished in the table of contents with a page number provided.

Scientific Papers and Presentations covers everything needed for scientific publications from format to ethics. “We provide the fundamentals of communication along with discussion of associated topics such as ethics and legal issues, communication without words, the challenges faced by international student, communication with non-scientists, and other concerns that anyone working in science may encounter” (p. xvii).

Each chapter simply explains details needed for a competent written report or explanation of information. Several other authors are also referenced for further instruction. This gives the reader a broad spectrum of information and styles of writing. The authors encourage the reader to pay attention closely to chapters 1 and 2. Not only do they provide vital introductory information, but they also make several recommendations for other readings if needed. Personally I recommend chapter 3, Organizing and Writing a Rough Draft, to be a must-read as well. It provides an in-depth explanation of outlining and brainstorming. This step is vital to the writing process.

The remainder of the chapters discusses literature selections, different documentation types, and how to write and present for the audience.

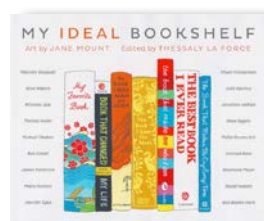
Scientific Papers and Presentations is a well-written book as well as being clear and easy to follow. This book will be beneficial not just to scientists, but anyone who struggles with their writing.

Margaret Wagner

Margaret Wagner is a student at the University of Houston-Downtown majoring in professional writing with a minor in digital media. She is providing book reviews and performing other intern-related tasks for the STC Book Reviews Editor of the Technical Communication journal.

My Ideal Bookshelf

Thessaly La Force, ed. 2012. New York, NY: Little, Brown and Company. [ISBN 978-0-316-20090-5. 228 pages. US\$24.99.]



Now for a little something different. Quiz: (1) Name 10 books that are meaningful in your life, and (2) write about 265 words justifying your selections. Use one or more of these key criteria: (1) The

books represent you; (2) they changed your life; (3) they made you who you are today; and (4) they are favorites of favorites. (They list three more, but these are the key ones.) La Force asked over 100 people in various disciplines for their choices and explanations, collecting the results in *My Ideal Bookshelf*.

Included among the disciplines of the respondents are writers, artists, journalists, curators, architects, librarians, and 17 others from the humanities, technical fields, and law. La Force admits that the listing for all respondents is but a snapshot. As life goes on, the contents of the shelf will probably change. But, it is an interesting picture of what has helped shape the lives and work of these respondents.

Unfortunately, much is left for you to figure out why some books are important. Some respondents talk about favorites, but many comments provide only biographical background. You might puzzle over certain books selected. For example, Tony Hawk selected books that emphasize perseverance and endurance, yet there's a copy of Dr. Seuss in his list.

Jane Mount faithfully reproduces the spines of the books selected but adds subtle touches such as different bookends and small birds looking into the books. Even the dust jacket surprises because you suddenly realize that the spines of the seven books are really the criteria used by the respondents. The last page offers you the opportunity to name your favorites, after which you are invited to scan the page and send it to idealbookshelf.com.

A snapshot of the snapshot: Tony Frere-Jones, typeface designer, lists 10 books, but only one is directly connected to typeface design: *Printing Types Made at Bruce's New York Type-Foundry, 1882*. Unusual choices include Whitman's *Leaves of Grass* and Rand McNally's *Cosmopolitan World Atlas*.

Malcolm Gladwell, writer, uses books for ideas. He is currently at work on a new book on crime and power, so his bookshelf contains 12 books that support his research. No unusual titles appear.

These two show the range of influence books have on their readers. Frere-Jones's choices affected his life and taught him an important lesson, that of patience; Gladwell's are here today, but will change tomorrow when his new book is done.

This collection offers insight into how books have shaped the lives of the respondents. It is an ideal book for dipping into from time to time, especially if you have answered the quiz and keep your listing up-to-date. And it also offers an additional insight into familiar respondents. *My Ideal Bookshelf* is a great read and a wonderful bargain, so it is highly recommended.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he serves as guest professor at the University of Paderborn, Germany.

#tweetsmart: 25 Twitter Projects to Help You Build Your Community

J. S. McDougall. 2012. Sebastopol, CA: O'Reilly Media, Inc. [ISBN 978-1-449-30911-4. 88 pages. US\$19.99 (softcover).]



Social media is on the rise and many companies are taking advantage of these new tools to connect with their customers. In *#tweetsmart: 25 Twitter Projects to Help You Build Your Community*, J. S. McDougall goes over 25 different projects to help you use Twitter to connect with your

customers. These projects aren't solely dependent on Twitter; you can use most social media sites.

Many companies jump on the Twitter bandwagon and then realize they have no idea what to use it for. McDougall is whole-heartedly against bland sales notifications. Many companies use Twitter to simply provide products, sales, and coupons. He says, "I've

made no secret of my distaste for coupon campaigns on Twitter" (p. 61). McDougall suggests using Twitter to interact with your customers instead of merely blasting at your customers.

McDougall provides inspiration for great ideas on how to use Twitter to build a community with your customers. *#tweetsmart* is a simple list of ideas about how to play with your customers and engage them. The goal is to interest people in you and your product, and reward them for such interest. Each chapter goes over a generic project idea. McDougall provides an example of how a fake business could have implemented the project, such as "a motorcycle shop in Massachusetts called Mohawk Cycle Sales" (p. 55). He relates childhood stories as anecdotes to explain the inspiration behind the project ideas. As an introduction to a Web-based scavenger hunt, McDougall relates, "When I was a boy, every year on a chilly October morning... my parents would sneak around the yard of our brown saltbox suburban home stashing small plastic prizes and scribbled clues" (p. 41). Depending on your company, showing a sense of humor is a good thing. But even if your company doesn't lend itself to humor, people always like to win prizes, which is the point of many of these projects.

McDougall also keeps in mind that not everyone has the same level of comfort using Twitter or is not so tech savvy. He covers the necessary information for Twitter newbies without going into distracting detail. For example, before going into what a hashtag game is, he defines hashtags as a "keyword or phrase preceded by the pound sign" (p. 9). McDougall then goes over a brief history of hashtags so you understand how they are used. Instead of delving into the details of adding Twitter buttons to your site, he says you can simply contact an IT specialist to make quick work of the job.

As a great example of how inventive you can be with incorporating Twitter, each chapter includes a QR (Quick Response) code. You can scan the code to recommend the project to your Twitter followers. *#tweetsmart* is full of great Twitter ideas to engage and delight your customers.

Angela Boyle

Angela Boyle is a technical writer for Tyler Technologies, Inc., where she has worked for seven years. She graduated from the University of Washington with a BS in technical communication.

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